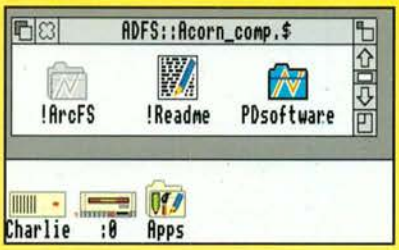
APRIL 1993 Vol.11 No.2 £2.95

100% ACORN

Acorn COMPUTING

S-BASE DEVELOPER
Build your own powerful database system with ease



NEWCOMERS
Absolute beginners guide to using your new Acorn micro

BATTLECHESS
Brilliant new version that plays well and looks even better

REAL PC POWER

New emulator card opens up wide world of software

No coverdisk?
ask your newsagent

FREE
LAST NINJA
from Superior Software
PLUS
KEYWORD
FULL PROGRAM
WORTH
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RRP

9 770967 525014 04
EUROPRESS PUBLICATIONS

WIN one of three Chroma Genlock video cards • National Curriculum Special inside

SCSI systems The complete

CD ROM Systems

Our CD ROM systems comprise of a Toshiba mechanism (Multisession - Photo CD compatible), a Morley SCSI card, a set of stereo speakers and four collections of discs to choose from (see below). The software on these discs is all RISC OS software and requires no use of a PC emulator whatsoever.

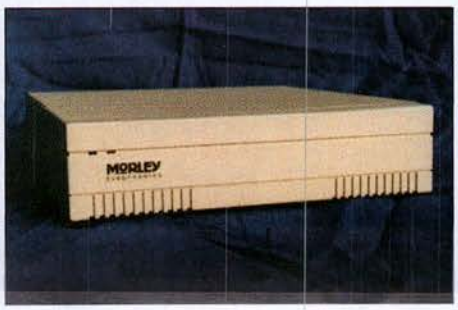
Collection 1	£649.00
(Grooves, Creepy Crawlies, Image Warehouse)	
Collection 2	£729.00
(Grooves, Creepy Crawlies, Image Warehouse and Hutchinsons Encyclopedia)	
Collection 3	£769.00
(Grooves, Creepy Crawlies, Image Warehouse and Dictionary of the living world)	
Collection 4	£849.00
(Grooves, Creepy Crawlies, Image Warehouse, Hutchinsons Encyclopedia and Dictionary of the living world)	
CD ROM Drive & SCSI Interface	£489.00

Hard Disc Systems

The Morley Hard Disc systems comprise of a SCSI card together with all the necessary cables, SCSI management software, Hard Disc and a detailed manual. Effectively giving the user a 'plug in and go' solution to Hard Disc storage Many of our existing customers have commented about how easy it was to connect their Morley Hard Disc to their computer.

External Hard Discs are housed in an attractive metal case with dual SCSI connectors and device ID switch already fitted. As with all of our SCSI cards CDFS is installed as standard.

A3000 or External 40Mb	£349.00
A3000 or External 80Mb	£499.00
A3000 or External 240Mb	£709.00
A300/400/5000 Internal 40Mb	£269.00
A300/400/5000 Internal 80Mb	£449.00
A300/400/5000 Internal 240Mb	£699.00



Syquest Hard Discs

Our removable Cartridge Hard Disc systems are designed to offer the end user the ultimate in terms of portable, mass storage. The systems come in a choice of either 42Mb or 88Mb sizes (non interchangeable). With the benefit of a small on-board cache the mechanisms offer superb performance with transfer rates exceeding that of many standard fixed hard discs.

The biggest advantage of these systems is that when a cartridge is full, you simply have to insert a new cartridge and you have another full 42Mb or 88Mb to play with.

All systems

42Mb system	£499.00
88Mb system	£775.00
(Both include SCSI Interface & one cartridge)	

Consumables

42Mb Cartridges	£65.00
88Mb Cartridges	£109.00

from Morley. solution.

Tape Archive

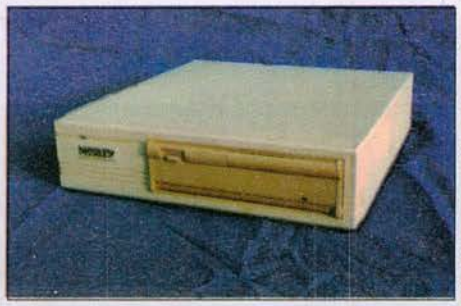
Tape archive systems tend to be regarded as expensive add ons to an Acorn system. The part that people tend to forget about is how valuable is their data? If you manage a network just think how much time and cost would be wasted if the hard disc failed without you having a recent back-up. Using standard floppy discs for back-up is one option but is incredibly tedious if large amounts of data are invloved.

The answer is a Morley Tape Archive system. With every system sold we supply a FREE copy of SAS (Safe & Sound) archiving software to make backing up and restoring as simple as possible. Don't get caught out!

External 250Mb system	£799.00
(Includes SCSI Interface & one 250Mb tape)	

Consumables

250Mb Tapes	£24.99
150Mb Tapes	£19.99



Floptical® Systems

The new Floptical® system has been developed in the USA by Insite Peripherals of California while the drives are being manufactured by Matsushita of Japan (one of the worlds largest electronic manufacturers). 3M and Hitachi are currently producing the special 21Mb discs which give this incredible amount of storage. Morley have developed the drive for use on the Acorn range of RISC OS computers and this can now read and write standard 800k and 1.6Mb floppies as well as the 21Mb Floptical® discs. Using the 21Mb discs these drives are approximately twice as fast as normal floppy drives making them perfect for use as a backup system or general purpose program/data storage.

External 21Mb system	£499.00
A5000 internal 21Mb system	£425.00
(Both include SCSI Interface & one disc)	

Consumables

21Mb disc each	£24.00
Pack of 5 x 21Mb discs	£99.00

Other Prices

RISC OS CD ROM DISCS

Creepy Crawlies (MDI)	£99.00
Grooves (MDI)	£59.00
Image Warehouse (MDI)	£59.00
Dictionary Of The Living World (MDI)	£175.00
Hutchinsons Encyclopedia (PEP)	£99.00
Woodland (APA) (incl. free RUCD)	£150.00
Frontier 2000 (CSH)	£175.00
Revelation 2 (Longman Logotron)	£139.00
British Birds (ILP)	£150.00

Other Products

Morley Analogue & User I/F	£59.00
Morley SCSI card (inc. CDFS)	£149.00
Morley cached SCSI card (inc. CDFS)	£199.00
CD Caddies	£6.50

Monitors

Microvitec CubScan 14" 0.28dp DMS	£399.00
Microvitec AutoScan 20" 0.31dp DMS	£1,049.00

Please note that all prices exclude VAT and carriage. E & OE

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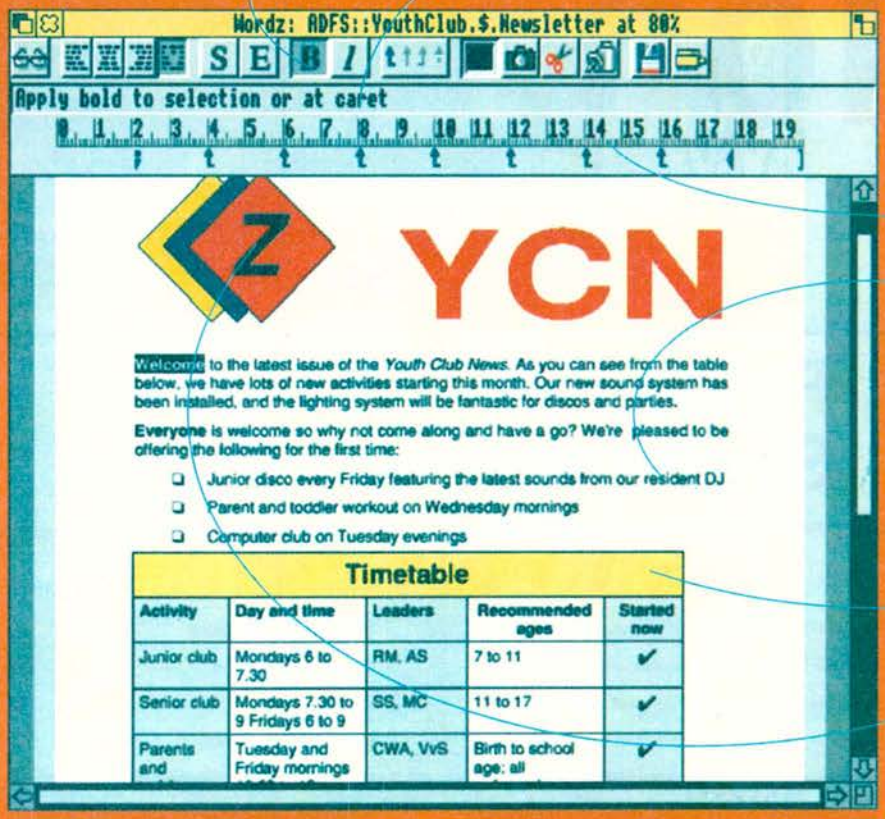
news from Colton Software


Wordz: ADFS::YouthClub.$.Newsletter at 80%
Apply bold to selection or at caret
YCN
Welcome to the latest issue of the Youth Club News. As you can see from the table below, we have lots of new activities starting this month. Our new sound system has been installed, and the lighting system will be fantastic for discos and parties.
Everyone is welcome so why not come along and have a go? We're pleased to be offering the following for the first time:
Junior disco every Friday featuring the latest sounds from our resident DJ
Parent and toddler workout on Wednesday mornings
Computer club on Tuesday evenings
Timetable
Activity | Day and time | Leaders | Recommended ages | Started now
Junior club | Mondays 6 to 7.30 | RM, AS | 7 to 11 | ✔
Senior club | Mondays 7.30 to 9 Fridays 6 to 9 | SS, MC | 11 to 17 | ✔
Parents and | Tuesday and Friday mornings | CWA, VvS | Birth to school age; all | ✔

At last, the word processor the Archimedes has been waiting for. A program that's so easy to use you'll be able to create great-looking documents the first time you use it. The facilities used most are in the *button bar*, and the *status line* gives you instant feedback. Just click and drag in the *ruler* to set margins and tabs; click on a button to cut and paste - it's that easy.

Wordz has all the features you'd expect from a state-of-the-art word processor. The powerful style editor gives you complete control over all aspects of your text; *font, spacing, margins,* and *colour*. Unparalleled control over *tables* including dragging to resize columns and rows. Speedy check-as-you-type or whole document spell checking. Import *pictures* and text from other programs, including PipeDream.

Wordz is the first of a family of programs which share the same easy user interface and include dynamic data linking. The spreadsheet Resultz will be available in mid-1993.

Wordz costs £99+VAT. *"Is it easy to use? It's falling-off-a-log easy to use."*

word"Z"! ®© ™ 1993...4...

for a free Wordz brochure, complete and return this coupon

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COLTON software

2 Signet Court, Swanns Road,
Cambridge CB5 8LA
Telephone 0223 311881
Fax 0223 312010

Real PC power

WE examine the very latest version of the Aleph One PC card to see just how far it's come. With faster graphics from the new Windows driver and more power using a 486 chip, can it beat real PCs? We have the answers – turn to Page 32 for the hard facts.

● *Cover image by Paul Austin*

Find out how to use the best and brightest cover disk by turning over the page

REGULARS

Comment	15
News	19
Public Domain	37
Newcomers	62
Body Building	71
Letters	98

REVIEWS

S-Base	41
Games	53
Shorts	86

EDUCATION SPECIAL

Check out our Learning Tree supplement with eight pages of software for the National Curriculum and four pages of reviews. It starts opposite Page 100.

● *Dig for adventure in ArcVenture II*

FEATURES

MegaDisk	6
32-bit disk	25
BBC disk	29
Buyer's Guide	31
32-bit beginners	47
Essential music	64
Risc OS 3.10	89

WIN A VIDEO CARD

This is your exclusive opportunity to win one of three Chroma Genlock video cards for your Acorn 32-bit machine. Make your computer into a power workstation so you can mix computer graphics with your home or professional video. Turn to Page 69.

● *The editorial and many of the adverts in this magazine were prepared using Impresssion and ArtWorks by Computer Concepts.*

April subscription disks

This month's exclusive *Acorn Computing* subscriber-only disks feature an excellent selection of quality software.

The Archimedes disk contains:

- Woodland database demo
- Ants! strategy game
- Pretty text routines
- Up-to-date reviews listing
- Plus the best of PD software

The BBC Micro disk contains:

- Timeslip commercial game demo
- Timetable creator/printer
- Banjo music and graphics demo

YOU can subscribe to *Acorn Computing* NOW – see Page 17

The MegaDisk

EXCLUSIVE SUBSCRIBER DISKS

See pages 25, 26 & 29

Last Ninja: May the force be with you

Superior Software (0652 658585) are giving you a chance to hone your martial arts with the first complete level of The Last Ninja. You find yourself in dangerous wastelands strewn with high-kicking opponents, discarded weapons and tricky paths.

You start with five lives, though they do say that an apple a day keeps the doctor away. Your energy is sapped when fighting and the knee kick is very effective to make sure you aren't the first to hit the ground. The control keys ", ?, A, Z, Return and Alt are all redefinable. If you prefer mouse control, move the mouse in the direction you want to go. When fighting, movement of the mouse with the Select button pressed acts as the movement keys above with the Return key pressed. The Menu button selects objects and Adjust selects weapons.

While you're taking part in all in mayhem and adventure, don't forget your mission – to uphold the true values of the Shadow Warrior. Look out for the special offer on the text screen.

If you have a problem running Last Ninja, use a de-archived version – see Newcomers on Page 62 – and switch to Mode 15 before running.

● *The way of the Ninja is fraught with dangers...*

...with new enemies at every turn

FAULTY DISK?

If your subscription disk has a physical fault – doughnut won't rotate in the sleeve, disk errors and so on – please return it for replacement to:

Europress Direct
FREEPOST
Ellesmere Port
South Wirral L65 3EB.

If there seems to be a fault with one of the programs please contact us by post describing your machine set-up and exactly what happens when you run the program. Software faults should be referred to:

Stanley Precision
Unit F
Cavendish Courtyard
Sallow Road
Weldon North
Industrial Estate
Corby
Northants

Getting started

THE programs on this disk are stored in a highly compressed format which sometimes enables as much as 1.6Mb of programs and data to be stored on a 800k floppy disk

The procedure for running the programs is very straightforward and does not require learning any special methods or techniques.

Switch on your Acorn micro, put the disk in the drive and click the drive icon. The software that unpacks the programs, ArcFS 2, loads automatically ready for use. Double-click the Acorn Computing icon, the screen switches to the Acorn Computing logo and then, after a few seconds, back to the Desktop but now there's another window available.

You can treat this new window just like any other one for viewing disk contents, you can run programs and open directories just by double-clicking them.

We recommend that you always read the !ReadMe files or access the help information via the Filer menu. See your Risc OS manuals for details.

Game controls

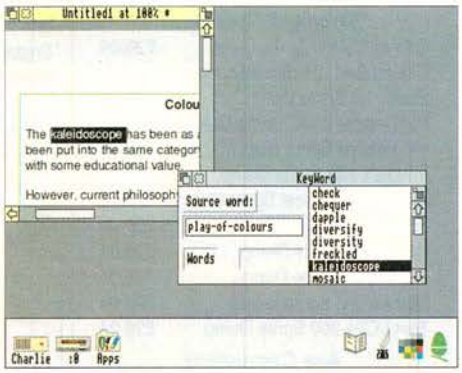
" A ? Z	Movement
Alt + "A ? Z	Jump
Return & " or ?	Attacking moves
Return & A or Z	Throw shuriken or bomb
P	Pick up a weapon
Shift	Select weapon
Ctrl	Select object
Copy/Delete	Pause on/off
F1/F2	Music down/up
F3/F4	Sound effects down/up
Esc	Go to menu if paused

£½ MILLION GIVEAWAY

The April MegaDisk is again chock full of useful programs. There is a complete commercial multi-tasking thesaurus – KeyWord – which can be used with any word or document processor plus the first level of The Last Ninja.

KeyWord: Words for all occasions

Now you never need be stuck for the right word as on this month's disk is the full and commercial version of KeyWord from Really Good Software (0582 761395) which retails for £29.95.



● *KeyWord lets you interact with other packages*

This multi-tasking program allows you to type in a word and find suitable alternatives which can then be dragged into any wordprocessor or DTP package which takes text files.

A comprehensive help file is included on the disk but the whole process is very intuitive to use. For instance, Enter *sh* then press Return. All the words beginning with sh in the database are then listed. If it's not known, the scrolling window will be blank and if only one word matches, KeyWord gives you a list of categories in which the word appears. Try *ka* to see what happens.

If you get a list of categories, double-click on the one which gives the definition you're interested in and all the words in that category will appear. When you have chosen the one you want double-click on a category word and you will get a list of all the categories containing that as well.

So you've now got the word you want which can be highlighted and dragged directly into your wordprocessor, text editor or DTP package.

The process can even be reversed. Select a word you want and save the selection as a text file (without styles) and drop it on to either the KeyWord window or the KeyWord iconbar icon. Or you could just enter the word from the keyboard.

!System: The latest version just for you

The !System you have on your Applications Disk is updated every now again with new modules – you may have come across demands for the latest version of CLib, for example.

On the MegaDisk this month is the latest version of !System and !SysMerge. Just double-click on !SysMerge and follow the prompts, dragging your original system and then the new version into the window. As space on your Applications Disk is a little tight, it is a good idea to have a separate System disk and it will be this one you update as new modules are released.

If you are unsure of what you are doing look out for the Newcomers' article in the June issue of *Acorn Computing* which will be dealing with updating both System and Fonts.

Acorn COMPUTING

WARNING!

***Acorn Computing* is proving so popular that newsagents are selling out quickly.**

We are printing more copies to satisfy the increased demand, but some newsagents may not have increased their order for the magazine.

If you do not see *Acorn Computing* in your local newsagent, please point out that you would like to see it stocked. Better still, why not use the order form below to reserve your copy every month?

Acorn COMPUTING

NEWSAGENTS' ORDER

Please reserve a copy of *Acorn Computing* magazine every month until further notice

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Note to newsagent: *Acorn Computing* should be available from your local wholesaler. If not, contact the Circulation Department on 0625 878888

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Phone lines open :-
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FAX: 061 766 8425

New Acorn Hardware

Official Acorn Publishing Dealer

A540 4Mb Ram, 120Mb HD	£1995.00
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A4 2 Mb FD Portable	£1399.00
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A5000 / Learning Curve / 2Mb Ram as above c/w software	£1445.96
A5000 / 4Mb Ram, 120Mb HD Arm 3, Acorn Multiscan Monitor	£1599.00
A5000 ES - Econet System Arm 3, Acorn Multiscan Monitor	£1299.00
A5000 NS - Network System Arm 3, Acorn Multiscan Monitor	£1399.00
A4000 Home Office System Arm 250, Acorn Monitor	£999.00
A4000 Home Office Multiscan System Arm 250, Acorn Multiscan Monitor	£1049.00
A4000 HD 80 System Arm 250, Acorn Monitor	£949.00
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A3010 Family Solution Arm 250, TV Modulator	£424.68
A3010 / 2Mb Learning Curve System Arm 250, Acorn Monitor	£680.00
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A3020 / 2Mb FD Multiscan System Arm 250, Acorn Multiscan Monitor	£799.00
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A Finance option is available on the above machines (14.7% APR)

Written details available on request

Acorn Special Needs Centre

We operate the Acorn Teacher and Academic Schemes

Please call for free information packs

A540 Upgrades

4Mb Ram Upgrade	£299.00
Taxan 795 VIDC Modes Disc	£7.50
Technical Reference Manual	£65.00

A5000 Upgrades

2Mb Ram Card	£110.00
Dust Cover (One piece)	£12.95
Technical Reference Manual	£65.00

A3000 Upgrades

1 Mb Ram A3010 (2Mb in total)	£49.00
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A3010 to AKF12/17 adaptor	£9.95
1 Mb Ram (2 Mb in total)	£45.00
4 Mb Ram	£128.00
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A4 Shoulder Bag	£35.00
A4 Technical Reference Manual	£65.00

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RISC OS 3 Hardware Kit A300	£25.00

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Philips Mono (Green)	£85.00

All monitors come with free lead. State type of computer when ordering.

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Citizen Swift 9	£169.00
Citizen Swift 240	£239.00
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Citizen Swift 128K Memory	£35.00
Integrex Colourjet 132	£519.00
HP Deskjet 500	£299.00
HP DeskJet 550C	£449.00
Laser Direct (LBP4 Hi Res.)	£849.00
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Econet

Level 4 AUN Software	£399.00

Scanners

Flatbed A4 256 Grey SCSI (CC)	£745.00
Flatbed A4 without SCSI card	£585.00
Scan Junior Scanner 256	£199.00
Scanlight Senior Scanner A4	£289.00
Sheet Feeder for above A4	£135.00

Fax

Fax Pack (CC)	£259.00

FREE

Acorn - 3 Years On Site Warranty on all Acorn Hardware* purchased from Dabhand Computing

*excludes Acorn Purchase Schemes / Education Schemes A4 Portable / Acorn Printer

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PRO Drivers (All)	£40.00

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4 Mation

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Computer Concepts

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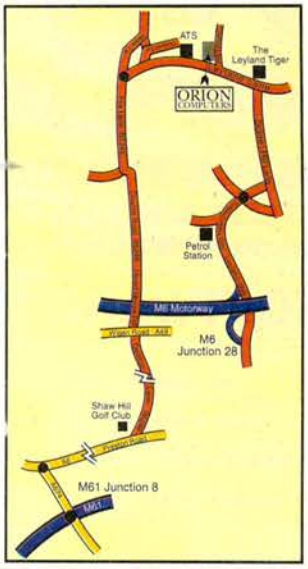

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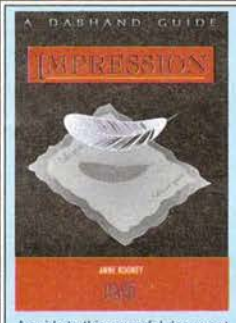

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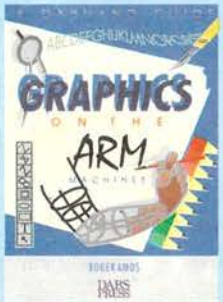

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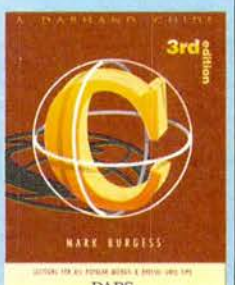

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Saloon Cars Deluxe	Fourth Dim	£25
– Deluxe Extra Courses	Fourth Dim	£16
S-Base Developer	Longman	£175
S-Base Developer Plus	Longman	£275
S-Base Personal	Longman	**£95**
Schema	Clares	£89
Schema 2	Clares	£POA
Science, drawfiles	Micro Studio	£25
Score Draw	Clares	£44
Scorewriter	EMR	
– PMS Dot matrix, Version 1		£127
– PMS Dot matrix, Version 2		£147
– PMS PostScript		£422
ScreenPlay	Widgit	£35
ScreenTurtle	Topologika	£44
Search and Rescue, age 9+	Storm	£27
Seashore Guide, drawfiles	Micro Studio	£16
Serenade	Clares	**£109**
Sesame Street	Electric Crayon	
– Letters for You		£16
– Numbers Count		£16
ShapeFX	Data Store	£10
ShareHolder	Silicon	£106
ShareHolder Professional	Silicon	£234
Shylock Gnomes, age 10-15	Selective	£16
Sim City (due April)	Krisalis	£24
SkyHunter	Longman	£22
smArt	4mation	£50
smArt Aliens, Animals, Dinosaurs, Egypt, Faces*, Fantasy, Fashion, Fiddles & Drums, Heraldry, Homes*, Leisure*, Look Smart, Smartoons, Trees and Gardens *Please specify English, French, German, Spanish or Welsh – each	4mation	£15
smArtFiler	4mation	£32
smArt Modern Languages	4mation	£19
Smudge the Spaniel, age 4-8	Storm	£22
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SolidsRender	Silicon	£79
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SparkFS	David Pilling	£20
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Spex	ExpLAN	£88
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– as above + MEMC1a		£124
– as above + MEMC1a + fitting		£154
A310 4 Mb soldered + MEMC1a ‡	IFEL	£180
– as above + fitting		£210
A5000 2-4 Mb Non-upgradable †	Atomwide	£85
A5000 2-4 Mb Upgradable †	Atomwide	£99
A5000 2-8 Mb including fitting	Atomwide	£500
A5000 4-8 Mb including fitting	Atomwide	£391
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– as above + JP150 Printer		£889
A3020 2MB FD	Acorn	£749
A3020 2MB HD60	Acorn	£899
A4 2MB FD	Acorn	£1395
A4 4MB HD60	Acorn	£1695
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– pack of 4		Vo £10
ArcNET	ACS	£69
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– Bulk package	Acorn	£335
– A5000	Acorn	£17
Seal 'n Type spill-proof Keyboard Covers		
– Archimedes / A5000	Kador	£14
– A3000	Kador	£14
TouchWindow	Lindis	£234
Whisper Fan Quietener (for A300/A400 series only)	ICS	£15
Wizzo IDE Filing System on rom	ICS	
– Wizzo4 for A4		£29
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I²C PRODUCTS . . .

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Bubble Jet BJ-300	Canon	£299
Bubble Jet BJ-330	Canon	£405
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Exploding the myths

LET'S get one thing absolutely straight: Computers *never* make mistakes. How many times have you heard the argument from a bank, building society or similar computerised organisation: "Oh, I'm so sorry. You see, the computer made a mistake."

Well every person in authority who has ever uttered that phrase, or one like it, is lying. Wittingly or unwittingly, they have told a fib, complete, dyed-in-the-wool garbage.

When a computer goes wrong physically the chances are it will come to a complete stop. As Mike Cook repeats time and again in Problem Solved, a computer's hardware has to be 90 per cent working before it will even switch on – and that 90 per cent has to include all the important bits.

Occasionally some minor function will fail, the disk drive might stop, or the sound may go on the blink – but when it does you *know* there's something wrong and you don't try to use it.

In Monopoly one of the Chance cards is *Bank error in your favour*. Now Monopoly is quite an old game and dates from before computers ran the systems. Bank errors were more common then: Somebody would write down a wrong figure at some point and bingo, someone gains or loses tens, hundreds or thousands of pounds.

But now we have the perfection of computers, these tireless, hard working machines that will add columns of figures millions of times each second without making a single mistake. But as I've mentioned in a previous column, computer hardware is less than half the story, it's the software that really counts. The hardware would just sit there doing nothing without software to tell it what to do.

When any organisation decides to computerise any part of its function it buys some software to do the job and hardware to run it. Or alternatively it employs a company to analyse the tasks the software is to do – Systems Analysis – and the software is written to do it.

The first method means that you usually have to compromise your company operations with what the software offers while the second method does not involve compromise but costs a lot more. In both cases you have some software to do the job, so you train your people to use it and away you go.

If, for example, you're in a bank there comes a point where the cheques you write have to be entered into the computer. What a dull and tedious job – but someone has to do it. Here's one place that errors can occur, but frankly they very seldom do and they're easy to trace. But notice its a *person* who makes the error, if it happens.

The second place where errors can breed is more subtle.

It's not too far wrong to say that the whole of Computer Science is dedicated to prevention of error. Choice of computer language, methods of writing software, checking the validity of inputs and so on. It all comes down to how to stop errors getting into the data.

And if they do get in, who's fault is it? Well, I'm sorry to upset any one but it isn't the computer's.

It's not the computer's fault when the hardware breaks down. It's not the computer's fault if someone types the wrong numbers in. And it definitely isn't the computer's fault if the software does something strange with the data – and this is by far the most common error.

Who's fault is it? The programmer's, of course.

The programmer failed to see that a particular set of circumstances would result in his program going off the rails. Sometimes you get the situation where a software fault is detected and a *patch* is added, by a different programmer, to correct it. Then the patch itself causes even more spurious results in some different area.

The US Defence department are a case in point. They chose a computer language, ADA, which was designed by committee and which no programmer in his right mind would actually want to use. But being forced by bureaucracy to use it, they end up with *false alarms* of nuclear attack.

Coming closer to home, just remember the next time someone tells you it's a computer error – it isn't, it's human error all the way.

> The hardware would just sit there and do nothing without software

Steve Turnbull

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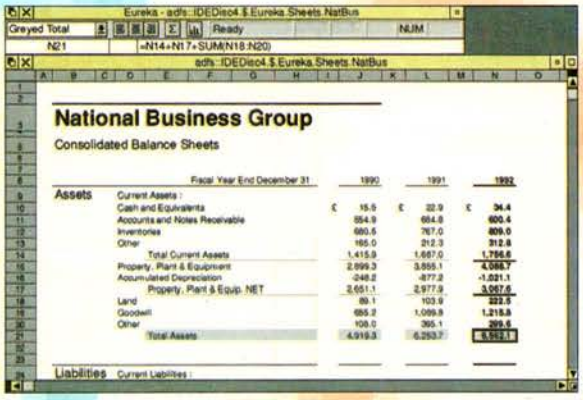

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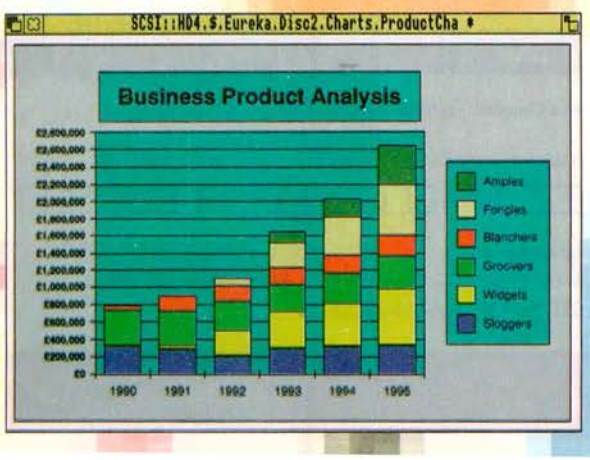

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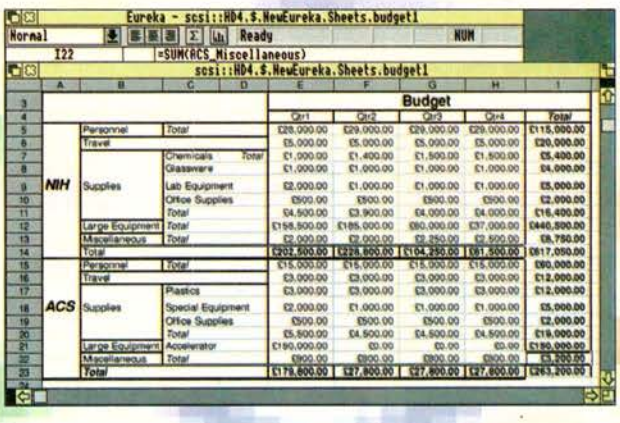

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Speeding up the ARM250

A TURBO memory upgrade card has been launched by Simtec (0772 812863) increasing the speed of the A4000 and A3010/20 and giving the machines a total of 4Mb of ram.

By replacing the existing slower memory with a new compact memory card – also used in the A3010 4Mb upgrade released in October – Simtec quote a 40 per cent improvement on speed giving 10 MIPS.

The card plugs into the memory expansion sockets and a small modification is made to the motherboard which should be done by Simtec themselves or an Acorn surface-mount service centre. Without fitting the upgrade costs £129.

Making a noise

COMMOTION'S (081-804 1378) latest release is CoSe – Commotion Sensing – a data logging package with key stage 1 pupils in mind but designed to be flexible enough until key stage 4.

The software is fully multi-tasking and the Commotion Sensor Box Pack contains all the necessary components for sending and data logging, all you need is an analogue podule.

The Sensor Box with the light, sound and temperature sensors creates an open environment for projects and experiments allowing students to explore, record and display the results of up to four sensors simultaneously, in graph, meter or digital format.

The complete CoSe package costs £119.95.

Hamming it up

STEVE Hunt – otherwise known as G3TXQ – has a selection of amateur radio software available for 32-bit machines. On one compilation disk priced at £9.95 you'll find a morse tutor, antenna designer, frequency predictor and filter designer.

If you want to find out more you can contact Steve on 0604 858090 or send an SSAE to: 21 Green Street, Milton Malsor, Northampton NN7 3AT.

Colourful upgrades

COMPUTER Concepts (0442 63933) have released major upgrades to their ColourCard and FaxPack packages with a free software update for the ColourCard giving you the option to configure the screen to 25MHz instead of 12MHz.

This increases screen update speeds so reducing the shearing effect when you drag windows around. The upgrade is free and available from both Computer Concepts and partners WildVision (091-519 1455) and the A3000 version of the Colour Card is now available from Wild Vision.

The long-awaited FaxPack file transfer and answering machine facilities are now here as well as the option to transmit faxes through Mercury. Both software and eprom are available free and Computer Concepts will upgrade the board if you'd prefer not to do this yourself.

It's a busy month for Computer Concepts with the ArtWorks Viewer also hitting the streets. This is a copyright-free utility which allows people who haven't got ArtWorks to see ArtWorks files. Images can be loaded using the Viewer and zoomed in and out as needed. Again the Viewer is available free to registered users.

Hush hush printing

FOR those of you who need a quiet printer Panasonic (0344 853551) have added a new colour 24-pin model, the KX-P2124, to their range.

With sound levels of 46.5 dBA and 43.5dBA in super quiet mode it is aimed at those in open-plan offices. An option upgrade kit gives you access to seven colours.

For £395 there is an easy-to-use front control panel, four paper feed paths and push/pull tractor and print speeds of up to 256 cps.

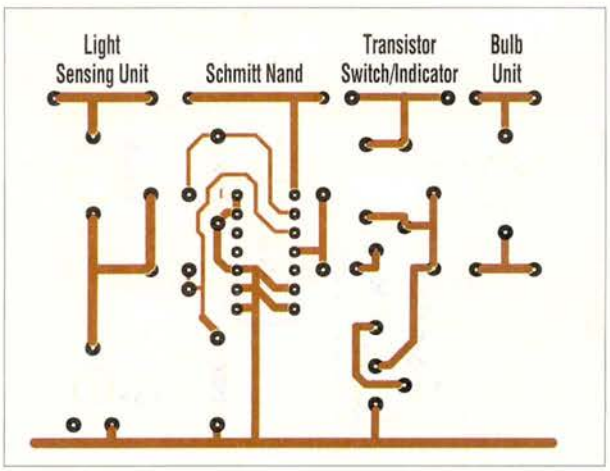
Design for PCB technology

SILICON Vision (081-422 3556) launched their latest product at the recent Design and Technology Exhibition in Birmingham called AlphaTracks.

This provides a complete electronics teaching course based on Silicon Vision's ARC-PCB and designed with the Unilab Alpha System Electronics modules in mind.

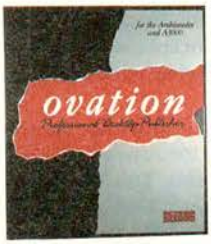
Students can explore electronics prototyping at the system level and then move on to the design on the PCB at key stage 3 level. The designs can be output to copper-clad boards with a plotter using spirit-based pens for direct etching with the boards then being assembled and tested to give a student the full experience of the process.

Alpha Tracks consists of teaching notes and assignments and a disk of Alpha component libraries. The cost is £95 including a site licence though you will also need a copy of ARC-PCB which is priced at £125 or £375 for a site licence. Silicon Vision have a video cassette showing students using the course and this is available for £10.



● *AlphaTracks provides a complete electronics course using ARC_PCB and Unilab Alpha System*

RISC Developments' Software



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Ovation is the easy-to-use desktop publisher used on thousands of sites in education, home and business across the country. Now, in response to customer feedback, it has been enhanced with many new features, setting even higher standards of quality and value. Ovation is packed with professional features, yet remains easy-to-learn and instinctive to use. It provides a complete solution for all document generation; from simple single page letters to entire books with diagrams and scanned images.

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Site licence: **£475**

Desktop Thesaurus
SYNONYM FINDER

Desktop Thesaurus is a superb companion for all desktop publishers and word processors. It has been recently expanded, and now contains over 17,250 keywords and nearly 182,000 carefully chosen alternative words. The synonyms for the required keyword are listed in a scrolling window according to parts of speech, so nouns, verbs etc. are grouped together. Clicking on any synonym itself then selects that word as a keyword and displays its synonyms allowing you to browse through the data looking for the ideal alternative word. When you have located an alternative word, it may be transferred instantly into almost any application for you.
A special hotlink is provided with Ovation, but it is ideal for use with other packages such as Edit, Impression, Pipedream, 1st Word Plus etc.

Price: **£19**
Site licence: **£95**

TypeStudio
FONT MANIPULATION

TypeStudio is a complete text manipulation package ideal for producing professional quality adverts, posters, banners, logos, letterheads etc. Drawing tools allow lines and curves to be drawn to create almost any shape, along which text can be flowed. Pairs of lines may be linked to create shapes into which text and Draw files may be moulded. A range of special effects are available, including: shadow, slant, 3D and mirror.

Features include:

- Flow text along straight and curved paths
- Mould text and Draw files to shapes
- Wall, floor and graduated shadows
- 3-D, mirror, slant and plinth effects
- Save in internal and Draw file format
- Print using RISC OS printer drivers
- Import Draw files as moulds
- Copy, rotate and magnify
- Grid and zoom facilities

The package includes 7 fonts and a 64-page user guide containing worked examples.

Price: **£45**
Site licence: **£75**

HP500/550 & Star Drivers
PRINTER DRIVERS

The Printer DJ printer driver produces near laser quality output from the highly acclaimed Hewlett Packard DeskJet 500C and 550C colour printers. Both release 2 and release 3 drivers are supplied for each printer, each supporting 75 x 75, 150 x 150 and 300 x 300 print resolutions in monochrome, grey scale and full colour modes. PrinterLC is the approved printer driver for Star colour dot-matrix printers. It is suitable for both 9 and 24-pin printers including: LC24-200, LC-200, XB24-10 and LC-10. PrinterLC is a release 2 driver, supporting print resolutions from 60 x 72 dpi to 360 x 360 dpi depending on the printer model. Also suitable for many Epson and NEC colour printers.

Price: **£15** each
Site licence: **£75** each

RISC developments

RISC Developments Ltd.
117 Hatfield Road, St. Albans, Herts. AL1 4JS Tel. (0727) 40303 Fax. (0727) 860263

All software is available from good dealers or direct from RISC Developments. Please add VAT to all prices and carriage [illegible] for other software. Please write or phone for details of educational prices and site licences.

Setting sail

TURCAN Research Systems (071-483 2681) have released version 1.10 of Dreadnoughts, their surface fleet simulator presenting you with scenarios between 1914 and 1916. The latest version includes an on-screen charting system and menu interface and costs £34.95 with additional scenario disks priced at £16.95 each.

Open to all

Cambridgeshire Software House (0480 67945) will be holding an Education Open Day on Saturday March 20 at Westfield School, St Ives between 10am and 4pm.

You'll be able to see products from Acorn, 4Mation, Sherston, Minerva, Topologica, Longman Logotron, ESM, NSNSU Special Needs Unit, PDK, Cambridgeshire IT Centre and Icon Technology as well as CSH themselves.

Watford Electronics (0582 488000) will now be holding their Open Day on Sunday 18 April at their Luton offices. Seminars and presentations will be given by industry leaders such as Acorn, Star, Hewlett Packard and Intel.

Acorn Computing will be at both shows to give help and advice.

Propheting down under

ACORN New Zealand have recently organised a chain of retail details to promote the A4000 Home Office System to the consumer market. They have also chosen to included Apricote Studio's (0354 78432) Prophet in this package.

Prophet was chosen as it complements Icon Technology's EasiWriter 2 which is bundled with the A4000 system. Prophet comes in a special version for New Zealand and there are also versions for Holland, Australia, Canada and of course the UK.

More selective: From cubs to clubs

SELECTIVE Software (0458 43079) have released two new packages. The first, Number Zoo, is aimed at children between three and six years and consists of two programs practising the skills of counting, matching and recognising numbers.

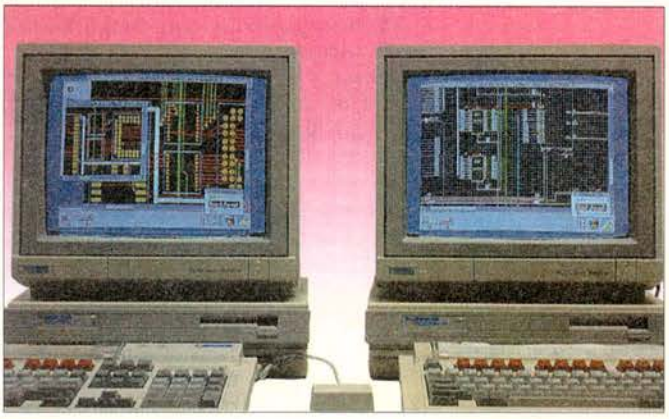
There are four games each complete with reward sequences and built-in routines for wrong answers, and numbers can be selected as digits, words, or dots.

A host of options is available to the parent or teacher and Number Zoo retails for £16.45.

The second release is SportsPeople which allows schools and clubs to use their 32-bit machine to plan, organise and run sports events. Competitors can take part on an individual basis or against one another. The product complements SportsDay which is used for team competitions.

Printouts are designed to make the organisation easier and a full results service is built-in. The price is £26.44.

It's a must for design



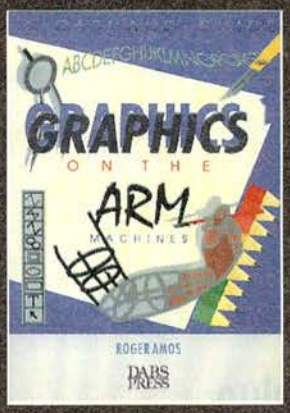
A NEW CAD package from Dutch-based USARC (010 31 20 6381534) is CadMust. This is a multi-tasking mouse-controlled CAD system used to design electronic circuits and runs on all 32-bit machines and includes component and package libraries.

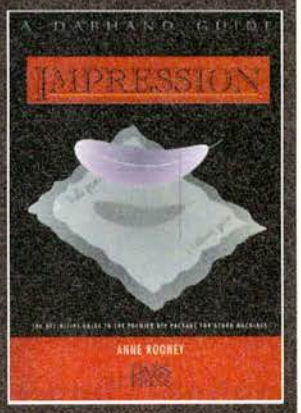
With CadMust-Schematic, library components are linked with wires and buses to create single or multi-file schematics.

The PCB is created by dragging a netlist icon over the CadMust PCB icon. To help with this are both optimising and autorouting tools and multi-layer design plus a facility to customise parts using the library editor.

Output is to dot-matrix and laser printers as well as plotters and an optional photo-plotter output is available. The complete package costs £749.

Graphics and DTP: A helping hand

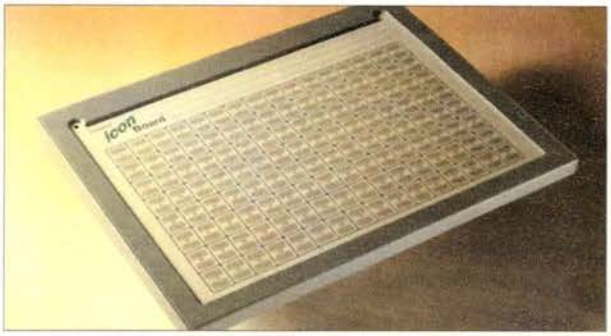




TWO new books have been released by Dabs Press (0772 623000), Impression II – a Dabhand Guide by Anne Rooney and Roger Amos' Graphics on the ARM Machines. Both books are priced at £14.95.

Impression II – a Dadhand Guide covers subjects which are equally relevant to the novice and experienced user and the disk which accompanies the book gives example of layouts to use or adapt.

Graphics of the ARM Machines deals with both the software and hardware sides of 32-bit graphics. As well as explaining the principles, it gives practical help with Draw, FontEd, DrawPlus, Vector and ArtWorks as well as information on porting sprites from other computer systems to help you get the best from them.



A new concept in keyboards

THE Universal Icon Board from MikroDaisy (0703 455004) is a new overlay keyboard. The Icon Board is A3 in size, is priced at £140 and interfaces with a whole range of different computers – you just change the lead.

Diary dates

Ideal Home Plus/Ideal Electronic Games Show
Earl's Court 2, London
25-28 March. Contact: Daily Mail (0895 677677)

Acorn User Show
International Conference and Exhibition, Centre, Harrogate, Yorkshire
15-17 April. Contact: Safesell (0737 814713)

Computer Shopper Show Spring '93
National Hall, Olympia, London
20-23 May. Contact: Blenheim Online (071-373 8141)

Multimedia '93
Earl's Court, London
15-17 June. Contact: Blenheim Online (071-373 8141)

It's all a dream

NEVYRON 2 is soon to be released under the title of TechnoDream by Superior Software (0652 658585). Written by Graeme Richardson it will retail for £24.95 with the game crammed on to two disks.

Out on the streets now, just take a look at what you're up against in this blast of mega-fury.

● *TechnoDream challenges you to a variety of locations, options and two-player firepower*

Image imagination: Clipart value

PALETTE Studio (0923 894355) now have a value-for-money range of clip art saved in Imagery format.

You can mix and match from a 20-disk set including illuminated letters, quality colour scans and an interesting set of painting by numbers pictures specially designed for children. Each pack consists of five disks and costs £5.

For schools and group users a site licence has also been set at £269.85 for any number of machines but at one site. The site pack includes a single master disk and manuals for each machine. Extra manuals in packs of five can be bought for £7.50.

Squish squash

ALSO new to the Acorn market are Unique Software with their Squish application. Quite simply Squish take Basic files and alters them to reduce code size in memory and on disk.

Squish gives you virtually unreadable code and faster programs for just £10. For further details you can contact Unique at 66 Eton Avenue, East Barnet, Herts EN4 8TY.

Welsh draws

FOLLOWING on the heels of their first release Dragonball, Aberystwyth-based TBA Software (0970 626785) are well into the development of Yo_Yo and Axis. Yo_Yo is a cute platform game complete with penguins, beach balls, pigs, electric fish, snowmen, pelicans, asteroids, robots and a smattering of fruit. Due out in April priced at £14.99.

Axis is also due to make its debut in April, but apart from the name and the fact that it is being released under the Power Station label priced at £24.99 the rest is *to be announced...*

Art to the fore

PRESENTATION Task Force is a library of 3,500 clip art drawings and fonts all in vector format for easy manipulation and editing. All in colour and of the very high quality they have been ported from the original PC program available in the States.

Available in the UK from ICS (051-625 1006) for £130, these images come on 1.6Mb or 800k disks and are accompanied by a book of ideas and information.

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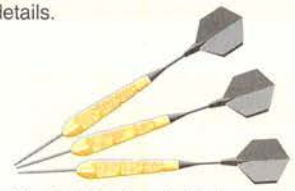
£8 + VAT per disc



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TopicArt4 Entertainment

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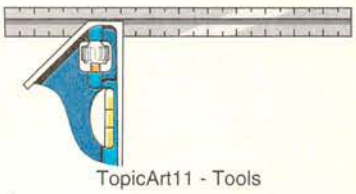

TopicArt11 - Tools

RISCOS 3.1 A300(Complt.)£63.83
RISCOS 3.1 A3000-A540£42.70
RISCOS 3.1 A5000 £16.17

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!QuickShow
Video Titling
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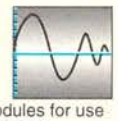
Has never been easier!

QuickShow is an easy to use slide show presentation and video titling package. It allows you to create a sequence of frames containing text of any colour with drop shadows, outline shadows and rubout boxes using outline fonts. Sprites can also be included in frames and positioned and resized as necessary. Once several screens have been created they can be linked together with the sequencer which allows you to fade each screen out and in with the many fades provided with the package. Completed sequences can be converted to a stand alone application which when run, automatically 'Shows' the sequence without using !QuickShow. 2Mb RAM required.

QuickTile £25+VAT

Up until now it has only been possible to print posters from Draw and Sprite files. Now with QuickTile you can create posters from ANY RISCOS application. The user simply enters the size of the source document, selects the required poster size and then selects PRINT directly from the RISCOS application! QuickTile does the rest, printing each tile with crop marks and references.

QuickSnd£10+VAT



QuickS(ou)nd allows you to load, play, convert & resave existing samples. Armadeus, Tracker, raw data formats are supported. Samples can also be converted into modules for use with the sound system, Maestro, Rhapsody etc or converted into stand alone Utility sample modules which when called, via a star command, loads the utility, plays the sample and then removes itself completely from memory. Special effects which can be applied to samples include Reverse, Echo, Max Vol, alter replay rate and resample at other frequencies. QuickSound is perfect companion to the Oak Sound Recorder.

Hardware, Software & Books (All prices exclude VAT)

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A-Link for either of the above	£51

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A540/A5000 Tech Guide (ea)	£65.00
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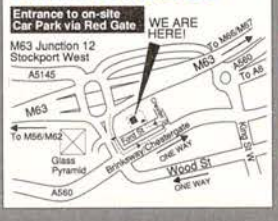

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MAR 93

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What about the workers?

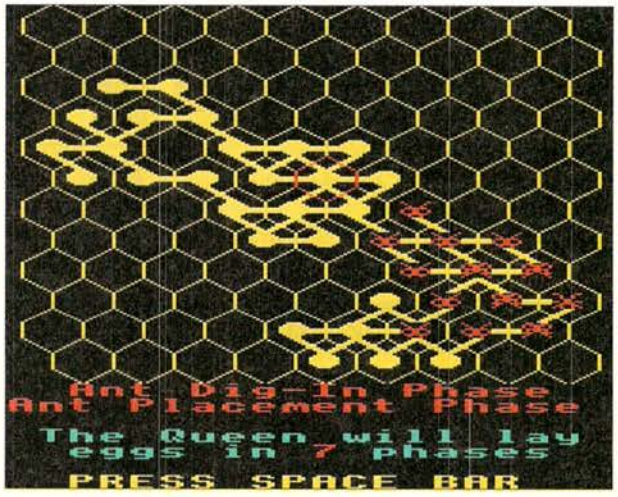
Ants: Conquest of the colonies

A small crack in the joint of a pipe in a nuclear power station went undiscovered for two hours. This would normally have been of little consequence but illegal experiments deep inside the station had produced a new and totally different kind of radiation which filtered underground and found a small colony of ants.

These, too, went unnoticed until a large mound, resembling a giant anthill, was discovered in some wasteland near to the station. The entrance to the mound confirmed traces of ants – giant ants.

Scientists calculated that if there was a queen ant down there it would not be long before it had laid giant ant eggs and then mankind would have a real fight on its hands. To pre-empt this possibility a team of underground sabotage specialists, used to smash the Embleton Colliery hijack of '86, was drafted in to destroy the ants.

Ants! simulates the underground battle between the ants and the humans. The ants must protect their queen while the humans must destroy her before the eggs are laid. The number of turns before the queen lays her eggs – and, consequently, the end of the game – is revealed at the start of each game.



The computer controls the ants and you control the human team.

The controls are as follows: Use Space to choose the unit to act, press S to select the unit. Direction is chosen with the following keys:

D	East
C	South-East
Z	South-West
A	West
Q	North-West
E	North-East

The arrow will point in the selected direction and a move in that direction is made by pressing Return. Laser units can dig a tunnel in the selected direction by pressing T. Bouncers can throw a grenade using B. If a unit is on the start hex it can be made to surface by pressing U. A unit on the surface will be re-armed instantly.

If a unit's full movement points are used up, play will automatically move into selection mode or to the ant phase if all the human units have acted.

If you want to end a unit's movement phase before using all its movement points, press F and to end a phase before all the units have acted, press L. To quit the game, press @. Full instructions are included in the help file.

Ian Waugh

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SignOn: Protect your directories

In a home environment one of the most desired pieces of software is one that prevents a directory from being opened by an unauthorised person – !SignOn is just such a program.

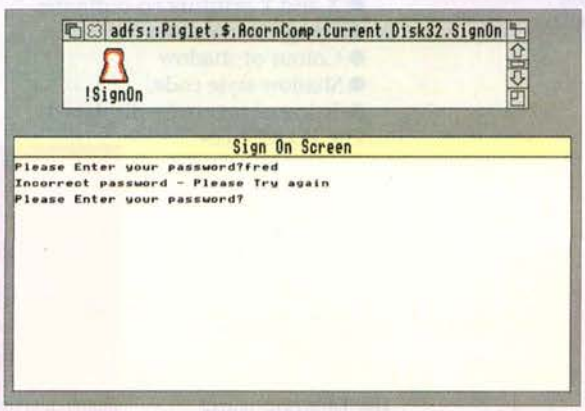
When you attempt to open a directory containing !SignOn it automatically runs, demanding to know the password – which, when it first runs, is *password*.

Once the correct password has been given the program installs on the iconbar and using the iconbar menu you can alter the password – as long as you know the current one.

This program is an example of the way simple utilities can be created using the Archway application-writing software from Simtron.

Please note that you can only have one version of !SignOn on a disk so rather than denying access to the whole machine it's better to protect one directory with sensitive contents. And once the password has been given, the utility will not reboot until the machine has had a hard reset or has been switched off.

Graham Kendall



32-bit reviews index...all the best

THE *Acorn Computing* subscription disk contains an up-to-date list of all the products for the Acorn 32-bit micros that have been reviewed in *The Micro User* and *Acorn Computing*.

Stephen Wade

Cacher: Faster and slower

This utility provides a desktop way of altering the state of the ARM3 chip if you have one, whether or not you are using the on-chip *cache* which makes the ARM3 the hottest thing since IBM's plant in Ohio burnt to the ground, making it an ARM 2, which if you think about it is still a heck of a lot better than most processor chips, not mentioning any names.

It is extremely simple to use. Instead of having to type:

```
*cache on
```

and

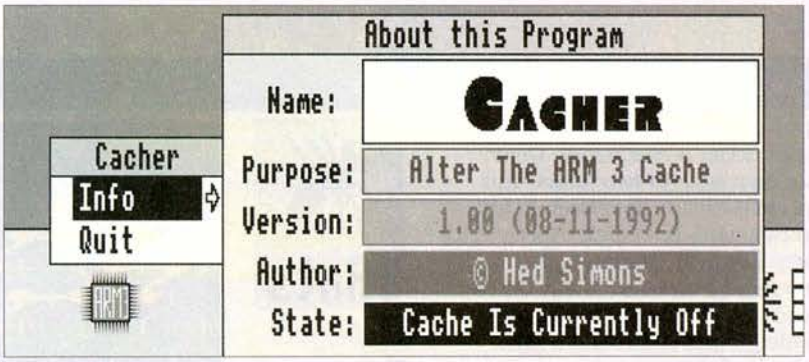
```
*cache off
```

at the command line, simply click on the ARM3 icon on the icon bar to turn the ARM3 cache on or off. If you're using Risc OS 3 or above, the icon will become inverted and shows that the cache is off. If the icon is not inverted, this shows that the cache is on. When !Cacher is loaded, it automatically turns the cache on.

If you become confused or aren't sure whether the cache is on or off, the Info window – accessible from the iconbar menu has an icon called *State:* this will tell you what you want to know.

Why would you want this utility? Well, some games run just too fast with the cache on so switching it off will bring it down to at least playable speed and I recommend you put this in your boot file so it's on the icon bar when the machine is ready to go.

Hed Simons



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Shadow text: Route to better displays

Every so often you may find your programs – particularly the single-tasking variety – a bit dull and bland compared to the colourful desktop displays. However, using some straightforward display techniques, it's easy to remedy this.

One of the simplest ideas is to use shadows or outlines to highlight certain information. This program incorporates two procedures – *shadow* and *outline* – to provide such a facility.

To achieve the effect of highlighting, the text must be printed twice using two colours and a one pixel change in position. Such small offsets can only be implemented with the graphics coordinate system. It is selected using VDU 5, and the text coordinate system later reinstated by way of VDU 4. The shadow procedure is self-contained and requires several parameters to be passed:

- X and Y printing co-ordinates
- Foreground colour
- Colour of shadow
- Shadow style code.
- String of text to be displayed

The X and Y co-ordinates relate to the position of the foreground text, not the shadow. They should be given as for normal text operations – conversion to graphics coordinates is done automatically by the program using several formulae.

Mode independency is ensured by gaining specific information about the current screen mode using *OS_ReadModeVariable*. Details can be found in the Programmers Reference Manual.

The shadow effect itself is generated from six commands:

- Change to shadow colour
- Move to offset position
- Print the text
- Change to foreground colour
- Move to the absolute position
- Re-print the text

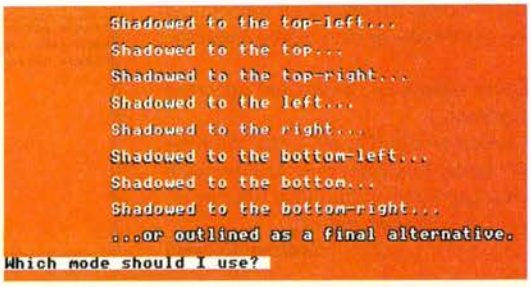
Eight different styles of shadow are possible, the relevant code being passed to the procedure in the fifth parameter:

Style code	Positioning of shadow
1	Top-left corner
2	Above
3	Top-right corner
4	Left
5	Right
6	Bottom-left corner
7	Below
8	Bottom-right corner

The outline routine develops this idea further by compounding the effect of all eight possible shadows: Two simple FOR...NEXT loops control this, avoiding the need for a repetitive sequence of statements. Parameters for the outline procedure are the same as above, except for the omission of the style code.

Any of your programs which use a screen mode offering four or more colours – other than Mode 7 – could potentially benefit from these routines, becoming brighter and more pleasing to the eye.

Stephen Wade


Shadowed to the top-left...
Shadowed to the top...
Shadowed to the top-right...
Shadowed to the left...
Shadowed to the right...
Shadowed to the bottom-left...
Shadowed to the bottom...
Shadowed to the bottom-right...
...or outlined as a final alternative.
Which mode should I use?

Woodland: British Wildlife on Rom 1

APA Multimedia (0634 295222) have produced Woodland for CD-Roms but this demo, exclusively written for *Acorn Computing*.

The full version has thousands of pieces of information, and this demo will give you a taster of this as well as allowing you to find some more out about buzzard, red deer, the common lime, and stinkhorn mushroom. You can save the pictures as sprite files and the words as text files for use in other programs.

Comprehensive help files are built into the program – just click on the information icon. A full review of the full CD-Rom version can be found on page 20 of the Education Supplement in this issue.

Acorn Computing

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Four great programs on your disk this month

TimeSlip: Really good challenge

FOR the first time ever we have a demonstration of an 8-bit BBC Micro game for you to try out. TimeSlip, published by Really Good Software, is a combination arcade-adventure in time with 50 levels, plus special extra levels as you fly into the control towers.

The game was designed and programmed by Steve Parkinson and the development of TimeSlip was chronicled in the *Diary of a Game* feature published in *The Micro User*. To give you an idea of the full program this demo contains three of the 50 levels and not all are easy.

You have been thrown back in time 500 years and must return to your starting place. For this you must refuel and jump forward in time – unfortunately you can only jump 10 years at a time. To refuel you must locate an asteroid containing arionite – they show up on the radar screen – shoot into it to heat it up to white-hot and then ram it with the ship to embed your hastily constructed, makeshift arionite-extractor. The molten fuel can be sucked out of the asteroid and into your fuel tanks.

Once you've collected enough fuel you can jump forward to the next level by entering the warp located at the centre of the warp space you're occupying.

Worse is that the asteroids are sometimes found in very awkward places, making them that much harder to mine. There are other objects to be found in space as well which will either help or hinder you, such as Centralisers which throw you back to the centre, Transporters which send you almost anywhere, Explosives which can be set off by switches, Mine Launchers, Sliders that control tower girders and, of course, the ever-popular alien inhabitants.

Game keys

Z	Left
X	Right
*	Up
?	Down
Return	Fire
P	Pause
T	Terminate life, restart level
Q	Quit

Solve the whole puzzle

You can buy the full version of TimeSlip from Really Good Software at a special reduced price of £9.95. Just send your cheque (payable to TCA) to 39 Carisbrooke Road, Harpenden, Herts AL5 5QS. Please state the type of disk you want: 5.25in 40T DFS, 5.25in 80T DFS or 3.5in ADFS.

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Basecount: Your number's up

THERE have been lots of programs to convert hexadecimal and binary numbers into decimal and back again. But it's possible to have bases from base 2 (binary) up to base 36 (called base 36).

In base 2 the digits 0 and 1 are used, for base 3 it's 0, 1, 2 and so on up to 10. Digits for base 11 are 0-9 plus A, and for base 36 they are 0-9, A-Z. This program asks you what number you want to count up to, starting from 1, then which base you want to use.

Then you can just sit back and watch what happens. Pressing any key will halt the counting which will resume by again pressing any key.

```
 22 ←Base→ 10

A L I C E  =  2575158
```

● *A curious base and curiouser numbers*

Banjo: Froggy frolics in the Deep South

THE Acorn 32-bit machines don't have exclusive rights to good graphics and sounds as this demo proves – all you need is a bit of patience and perhaps some talent as well.

Just run the program, sit back and enjoy.

Mike Goldberg

● *Sound and vision in harmony*

Timetable Printer; Period processor

This program allows you to create, save, edit and print school timetables in three different sizes.

To enter your timetable press 1 from the menu. To change period use keys 1 to 8. You can then move through the days with the < and > keys. To enter information press Return. Enter the subject and press Return, then the teacher's name followed by Return. Finally enter where the lesson is. The maximum length of each entry is 11 characters. If you do not enter anything on a line, what was there before is retained.

To clear the current entry, press Control+X. If you have a lesson more than once, you may find it useful to copy entries. This can be done by going to the original entry and pressing Tab. This copies the information to the clipboard. Pressing Copy copies it from the clipboard to the selected period.

When previewing a timetable, Escape will not return to the the menu until the preview is completed.

If you press * from the menu you can issue commands to the operating system, for example, cataloguing a disk – but don't use any command that will corrupt main memory, such as Format or Compact.

Jonathan Graham

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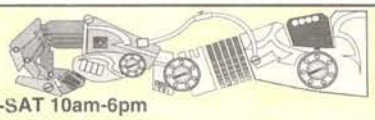

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The original Arthur operating system came with a diary application; unfortunately Risc-OS lost that very useful little utility. Diary+ offers you all that the original program had and more: you can browse and search through your diary, customise it to remember family anniversaries, and create diaries and print out planners for next year long before they are available in the shops. You can also print out your appointments for any month or year. You can use any Font, mark dates set alarms to remind you that you have an appointment. Diary+ has now been extended even further, you can now save Calendars or A3 planners out as Draw files and from there input any data that you require. Upgrades to existing Diary users is £5 + vat

Desktools, Desktop Toolkit

LOADS OF USEFUL UTILITIES

Trash Can Deletes files and transfers them into its own directory Ready To Trash. File/Find creates a data file containing the contents of your Discs/HDiscs Fast Find Routine. Vat Calculator. Window Stacker. Screen Saver With 10,000 Fractal Screens. File/Type/What/Type?. Clock. Floppy To HDisc Copier + Floppy Blanker + FreeSpace + Save Multiple Files To Disc As 1 File. 10 Page MemoPad. CFS/ADFS Switch. Function Key Info Given With Applications i.e !Edit etc. Application Launcher. Modules Show Rom/Ram + Allocated SWI Number And Name, Workspace Position, Base Number, Display All Module Info, SWI's And *Commands +Unplug/ Rmreinit Rmkill From Within Windows On Screen. Last But Not Least, What A Pair ?. £15 + vat

NEW ACORN RANGE FAMILY SOLUTION

A3010FS With ARM250 1Mb RAM 1.6 Floppy 2 Joystick Ports EasiWord Will Connect To TV. £424

A3010LC With ARM250, 2Mb RAM 1.6 Floppy Joystick Ports EasiWord, Genesis Collection, PC Emulator. Acorn Colour Monitor. £680

A3020 Floppy System With Acorn Colour Monitor, ARM250 2Mb RAM, 1.6 Floppy. etc. £749

A3020HD60 With 60Mb HD Acorn Colour Monitor 2meg Ram. £899

If Acorn MultiScan Monitor Required Please Add £50 To The Above Prices (Except For Family Solution)

ACORN POCKET BOOK £212
With Word Processor & S/Sheet.

If Acorn JP150 InkjetPrinter Required Please Add £215 To All Prices

A3010 ULTIMATE EXPANSION

MultiPodule 2 slot +HD space £42
MultiPodule+20mHD+PSU 2 slot £272
MultiPodule+60mHD+PSU 2 slot £399
20meg HD for MultiPodule £220
60meg HD for MultiPodule £349
PSU+Fan+Buffer Kit (A3010) £30
MicroPodule Scsi (Inc CDFS) £99
MicroPodule Anologue £29
MicroPodule Colour Digitizer £79
MicroPodule HiVision Colour £129
MicroPodule Midi £49

My World Utilities Discs

These discs are top quality multi-layer drawings for use with the My World program. Ideal for Schools. MWOO1 & MW003 are a useful tool for help within the National Curriculum (KS 1/2)

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Disc MW002 CHRISTMAS £9.99
Disc MW003 ANCIENT GREECE £14.95

A Site Licence is Available for the above (Call For Details)

SG001 EGYPT

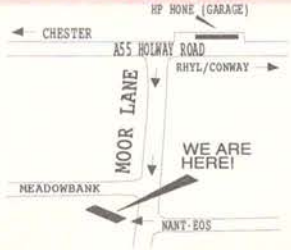
Studio Graphics

Top quality scalable Clip-Art. We have 9 sets available on various subjects. Discs are £8 each plus vat. (EXCEPT SG002/7/10) (Ideal For Schools)

Disc SG001 Egypt 100+ files on this disc (Colour)
Disc SG002 Flags of the world 270 files (Colour 2 Discs £15 + vat)
Disc SG003 General 100+ files (Colour & B/W)
Disc SG004 Christmas 100+ files (Colour & BW)
Disc SG005 General 100+ files (Colour & BW)
Disc SG006 Borders & Cartoons (Colour & B/W)
Disc SG007 Borders For Use Within Poster 100 Files £10 + vat
Disc SG008 Borders for use within Draw or any DTP Package
Disc SG009 Greek Clip Art (BW/Colour) £10 + vat

Where to find us

From Chester follow old A55 past Holywell until you see Moor Lane on your right, turn down Moor Lane, we are at the bottom (Big White Farm Gate). From Rhyl (As Above) but turn left into Moor Lane before Holywell



TERMS

UK residents add 17.5% VAT to all prices except books. Prices and manufacturers specifications subject to change without notification. Carriage is free (except for books/Software/Risc-OS 3.1) these will be shipped at cost. Goods offered subject to being unsold and/or available. Goods not offered on trial basis. If you require Next day delivery please add £12. Otherwise All goods despatched within 48 hours subject to availability. Restocking fee on non-defective returns.

Scanners and Digitisers

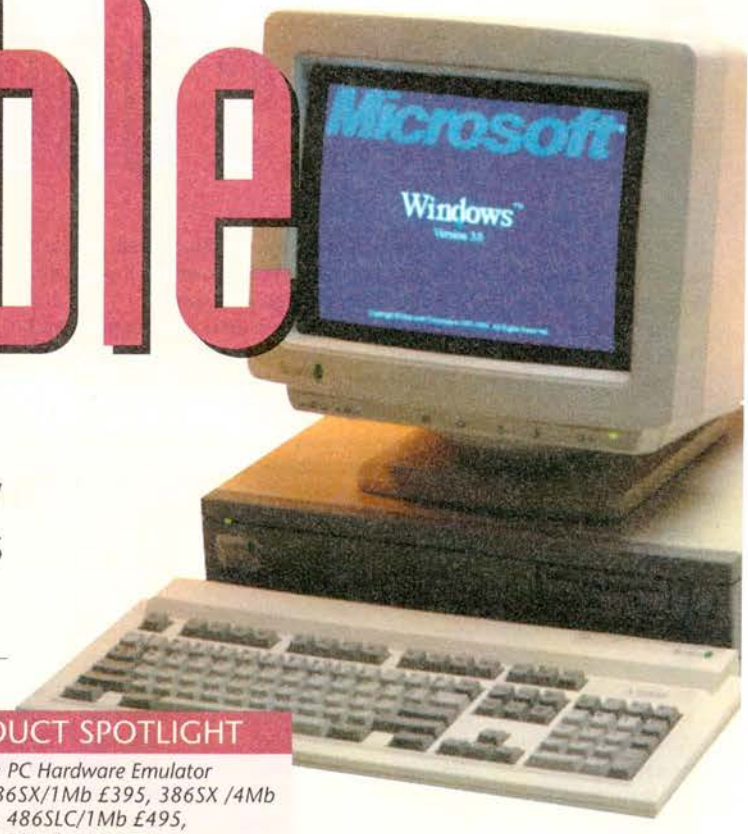
IMPORTING data can be done in a variety of ways using other people's artwork and sounds in clipart and tracker formats. However, if you can't find exactly what you want you can always grab your own.

Scanners are perhaps the most used hardware extra after a printer and there is quite a range to choose from. Video digitisers and digital cameras are making their mark too as costs come down and quality improves.

PRODUCT	PRICE	SUPPLIER	TEL	REQUIREMENTS	DETAILS
SCANNERS					
ScanLight 256	£199	Computer Concepts	0442 63933	A300/400/500, A5000, A3000 (external)	Half-width hand scanner with 400dpi resolution and up to 256 grey levels.
ScanLight Pro	£899	Computer Concepts	0442 63933	SCSI interface	Flatbed scanner with 300dpi up to 256 grey levels with software supporting wide range of image manipulation features.
Scanlight A4	£299	Computer Concepts	0442 63933	A300/400/500, A5000, A3000 (external)	Hand-help A4 width scanner, 100-400dpi resolution. Sheet feeder optional.
GT Scan	£1049	DT Software	0223 841099	A300/400/500, A5000, A3000 (external)	A4 flatbed 24-bit colour or 256 grey scales. Maximum resolution 800 dpi.
iMage	£495	Irlam Instruments	0895 811401	2Mb, A300/400/500, A5000, A3000 (external)	Based on the Sharp-JX-100 mini flat bed. 24-bit colour up to 400 dpi.
Iota Image Scanner	£399-£739	Iota Software	0223 421542	A300/400/500, A5000, A3000 (external)	Overhead 3D scanner. 300dpi black/white, 12-bit optional colour.
iScan 256	£599	Irlam Instruments	0895 811401	A300/400/500, A5000, A3000 (external)	Desktop/motorised, all sizes to A4 with 400dpi and 256 greyscales.
i-Scan True Grey-Scale Scanner	£579	Irlam Instruments	0895 811401	A300/400/500, A5000, A3000 (external)	A4 scan will need 4Mb ram. High quality at 200dpi in 16 greyscales.
ProImage	£999	Irlam Instruments	0895 811401	2Mb, A300/400/500, A5000, A3000 (external)	Professional flat-bed with 24-bit colour data at 800dpi up to A3 size.
TechnoScan II Scanner	£149	Technomatic	081-205 9558	A300/400/500, A5000, A3000 version £175	4in mono hand scanner with a maximum res of 400 dpi with 16 greyscales.
Scan 256	£185	Watford Electronics	0582 487777	400/500, A5000, A3000 (external)	Fast hand scanner offering 256 grey levels at 400dpi with multiple copies.
Scan256 Flatbed	£600	Watford Electronics	0582 487777	SCSI card	Converted from a PC board, needs a SCSI card. Gives 600dpi A4 scans but to do this will need 8Mb of ram for the highest resolution.
Archi MKII Hand Scanner	£109	Watford Electronics	0582 487777	A300/400/500, A5000, external A3000 version £119	4in hand scanning width giving 400dpi. Software on rom. On-screen help.
Archi A4 Scanner	£269	Watford Electronics	0582 487777	A300/400/500, A5000 and A3000 (external)	Gives a 218mm scan width with optional 10 page automatic document feeder or you can use it as a hand-held scanner.
DIGITISERS					
Apex	£2,750	Millipede Electronic Graphics	0284 850594	A300/400/500 series	TV broadcast quality images with facilities for real-time animation effects. Full colour input and output with optional digital television interface.
Prisma-3 Plus	£3,250	Millipede Electronic Graphics	0284 850594	A300/400/500 series	Genlocking and monochrome real-time frame grabbing standard with facilities for real- time animation. Resolution up to 1,536x574 pixels.
Moving i-Mage	£989	Irlam Instruments	0895 811401	A300/400/500, A5000, A3000 (external)	Full-motion video in any Risc OS mode while scaling and cropping in real-time. Hardware controls screen bypassing standard display hardware.
Snapshot	£199	Lingenuity	0986 85477	A300/400/500, A3000 version £279	Digitises and displays colour pictures in real-time. A 12-bit digitiser with an 8-bit mode for speed.
ARC Colour Video Digitiser (16-bit)	£199	Pineapple	081-599 1476	A300/400/500, A5000	Available in 12 and 16-bit versions with PAL, RGB and Sync inputs and a resolution of 512x256 pixels.
Techno-I	£249	Technomatic	081-205 9558	A300/400/500, A5000, A3000 version £279	Real-time colour card handling resolutions in buffer of 512x512. Software mimics the human visual system.
Archimedes Video Digitiser	£119	Watford Electronics	0582 487777	A300/400/500, A5000, A3000 (external)	Digitisers real-time images from video camera or recorders at 512x256 pixels. Display/grab of 25 to 125 frames per second in Mode 9.
Hawk V9	£199	Wild Vision	091-519 1455	A300/400/500, A5000, A3000 version £278	Grabs a single frame in real-time and converts to full colour sprite.
Hawk V10	£795	Wild Vision	091-519 1455	A300/400/500, A5000	Captures, stores and displays images in real-time independently of the host machin. Resolution 256x256 with 256 grey levels.
Hawk V12	£1990	Wild Vision	091-519 1455	A300/400/500, A5000	Similar to the V10 but resolution rises to 512x512 with 256 grey levels. Stores four full colour images and four binary overlay places per frame.
DIGITAL CAMERAS					
Colourmaster Basic System	£720	Cambridgeshire Software House	0480 67945	2Mb A300/400/500, A5000, A3000 external	Combines the Techno-I card and a Canon Ion still video camera. Easy to use system which takes and saves to disk or screen colour pictures.
Colourmaster Standard System	£850	Cambridgeshire Software House	0480 67945	2Mb A300/400/500, A5000, A3000 external	Adds to the aim and fire Ion camera and Basic System an attachment to convert 35mm transparencies to digitised images.
Colourmaster Professional	£1,995	Cambridgeshire Software House	0480 67945	2Mb A300/400/500, A5000, A3000 external	Canon Ion RC560 with built-in zoom, split screen and editor as well as 35mm adapter and infra-red wireless controller.
Fotoman Camera	£649.95	DT Software	0223 841099	A300/400/500, A5000, A3000 (external)	Hand-held electronic still camera system. Captures up to 32 images of 576x288 pixels and 256 grey scales storing them in ram.

NEXT MONTH: Music and Midi software comes under the *Acorn Computing* spotlight

Double



Clem Vogler gets a new computer that occupies no extra space

EVERY six months I find myself on the verge of buying a PC: *I can't go on not being able to run all that PC software* I tell myself. *They're practically giving them away.*

But I never do. As the moment of purchase draws near I find myself reflecting on all the deeply unsatisfactory aspects of PC life – the expensive software, the crippling memory limitations of Dos's 8-bit origins, and the contortions imposed by commercial insistence on backwards compatibility.

Quite apart from this – where am I going to find space for another computer? What about the nightmare of getting my peripherals switched, cabled and configured to access both machines? Worst of all, the shame of it. All those years of taunting luckless PC owners about the inadequacies of their machines then a naked PC peeping round the corners of my lace curtains. I'd never live it down.

And now I shan't have to – for the Aleph One has arrived, the answer to a maiden's prayer. A PC in an Arc. And the neighbours need never know.

The Aleph One card uses a four-layer pcb and is a considerable technical achievement, setting new standards in the density of tracks and components squeezed on to an Arc podule. At its heart is the VLSI (very large scale integration) Scamp (single chip AT microprocessor peripheral) chip which concentrates much of the hardware of a PC in a single package.

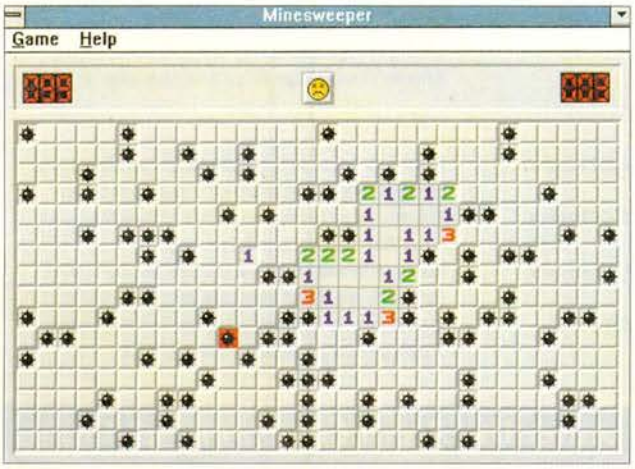
In front of this, dwells the CPU (central processing unit), which is either an 80386SX or a 486SLC, for the PC386 and PC486 cards respectively. In either case, the chip is clocked at 25 MHz. My review card had the more powerful 486SLC chip installed.

There is a certain ambiguity surrounding CPU designations for PCs caused by the machinations of the chip companies marketing departments who know that naive buyers will prefer something with 486 appearing in the title.

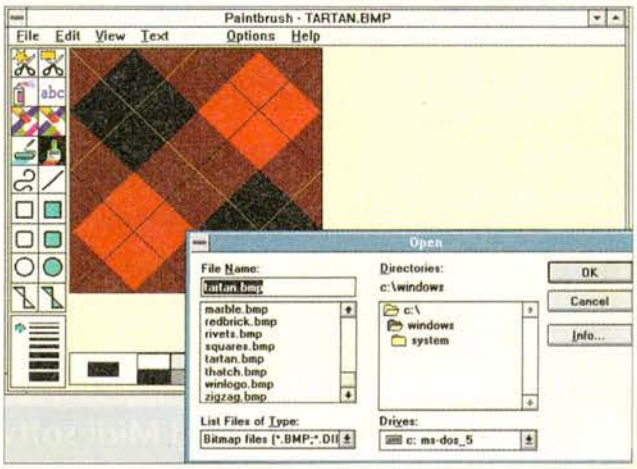
All 486s have an enlarged instruction set compared to the 386s and a top range 486 – usually

PRODUCT SPOTLIGHT

Product: PC Hardware Emulator
Price: 386SX/1Mb £395, 386SX /4Mb £495, 486SLC/1Mb £495, 486SLC/4Mb £595, Maths co-processor £99.
Supplier: Aleph One Ltd, The Old Courthouse, Bottisham, Cambridge CB5 9BA
Tel: 0223 811679 (Fax: 0223 812713)

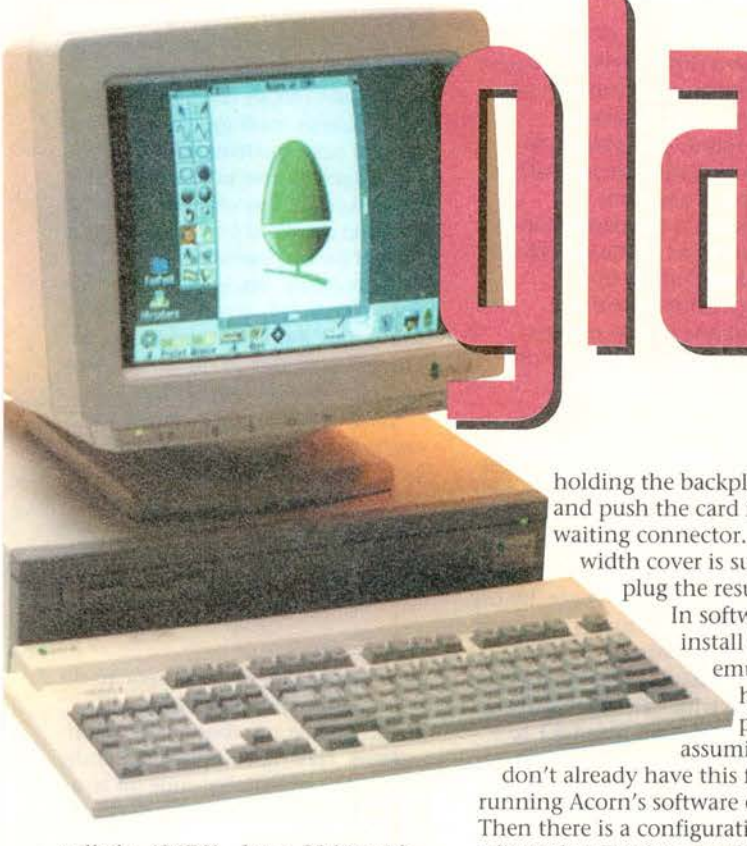


● *At last you can play Minesweeper*



...and dabble with Windows Paint

glazing



called a 486DX – has a 32-bit wide address bus, an integral maths co-processor for fast floating-point calculations and an 8k cache which allows certain software routines to be processed rapidly without the need to access external memory.

The 486SLC lacks the integral maths co-processor and has a reduced cache of 1k. The Aleph One board has a vacant slot for inserting a separate maths co-processor (83S87) chip and I have compared the performance with and without the co-processor present.

The 486SLC is pin compatible with a 386SX and shares the same 32-bit internal architecture and 16-bit address bus, so an upgrade replacement for a 386SX involves no alterations in board layout.

Both the 386 and 486 boards have 1Mb upgradeable to 4Mb. There's also an Arc boot rom and both a serial and a bi-directional parallel port which may offer advantages to users of older A series machines stuck with a uni-directional parallel port.

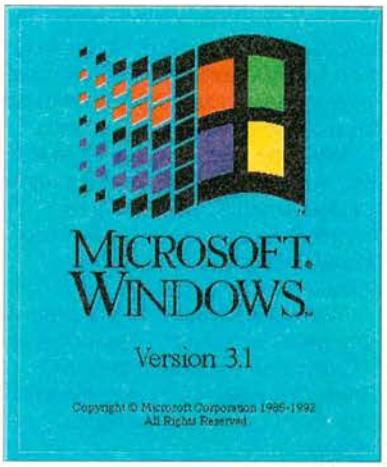
Hard disk management follows the arrangement used by Acorn's earlier software emulator, with one or more hard disks partitioned into a Risc OS area and a PC area. Under Risc OS you can read and write to either partition, but the PC side cannot access the Risc OS partition.

Installing the expansion card is easy. You take the lid off your machine, remove a couple of screws holding the backplane cover and push the card into the waiting connector. A half width cover is supplied to plug the resulting gap.

In software, you install the PC emulator and hard disk partition, assuming you don't already have this from running Acorn's software emulator. Then there is a configuration file to edit so that Dos knows which disk to boot from and one or two other details. It's all clearly explained in the accompanying handbook.

Potential buyers want two questions answered before they stump up for this PC card: Does it run software in a manner indistinguishable from a real PC? How does it compare for speed with the range of real PCs?

Software compatibility is almost total. All major applications and Windows run without a hiccup. Occasionally one encounters a piece of ill-designed software that accesses the disk drive directly or displays some other robust sign of independence. It's difficult for an emulator to anticipate such bad manners and, I think, unimportant. I tried several major packages and they ran flawlessly, including the notorious screen updating on WordPerfect which the Acorn software emulator can't manage properly.



● *Windows 3.1: The title page*

The issue of speed performance is more complex. When multitasking, with PC applications running in a Risc OS window, the time-slicing can slow the PC side significantly if ➤

What it is, what it does

The PC card comes in two forms, either as a half-width expansion card to fit models with standard podule expansion slots, or as a mini-podule to fit the A3020 and A4000 machines. The A3000 and A3010 are not supported.

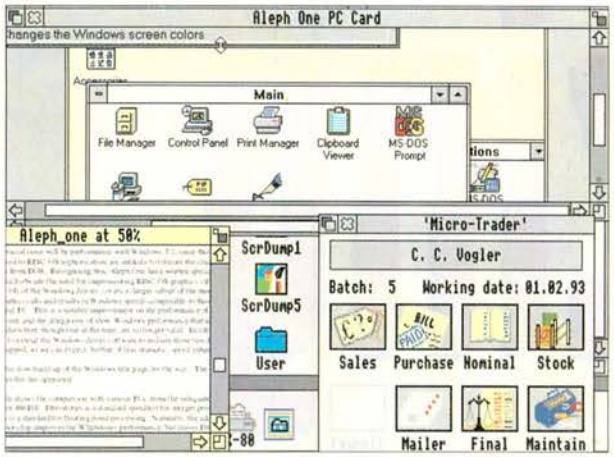
Although Aleph One have designed both cards, the half-width one is sold by them, whereas the mini-podule version is marketed under licence by Acorn. There are slight constructional differences necessitated by the smaller size of the mini-podule, which communicates with its motherboard over an 8-bit interface rather than the 16-bit interface of the half-width card.

I had expected that the mini-podule arrangement (which I have not seen) would run slightly slower but Acorn's published specification claims the same benchmarks as for the larger card. Each card is available in two versions having either a 386SX processor or a Cyrix 486SLC processor.

With the card installed and Acorn's PC emulator software (version 1.6 or later) present, you can run PC software in a Risc OS window, or as a single task. So you can run Dos and Dos-based software like WordPerfect, Excel, Lotus and PageMaker. If you have the higher spec (486) card you can run Windows – the Graphical User Interface which tries to do for PCs what Risc OS does for the Arc.

Unlike the Acorn software PC emulator, which is slow, uses lots of memory and suffers occasional software incompatibilities, the PC card really does emulate a real PC.

It uses much less memory, is as fast as all but the highest spec 486s and you can run Risc OS applications at the same time.



● *Multitasking was never like this: Windows above, Risc OS below*

➤

it's updating its screen. In practice, you would normally let the PC take over the screen and only flip into the dual mode for Risc OS operations.

With the screen dedicated to the PC, you get three different standards of performance, depending on whether an application is Dos text based, Dos graphics based or running under Windows.

With Dos text-based applications, the speed is similar to that of a real PC using an equivalent processor. With Dos graphics-based software, the speed of screen updating is slower.

This has surprised some people, who expected that only good could come of devolving the video processing to the fast ARM chip. In fact there is a time penalty incurred as the Archimedes traps the painfully slow 4-bit BIOS calls and issues its own graphics instructions.

For most users the crucial issue will be performance with Windows 3.1, since those of us who have become used to Risc OS sophistication are unlikely to tolerate the crudities of running applications from Dos.

Recognising this, Aleph One wrote special Windows drivers which obviate the need for implementing Risc OS graphics calls.

The current version (V 1.04) of the Windows drivers covers a (large) subset of the most commonly made graphics calls and results in Windows speeds comparable to those obtained with an equivalent real PC. This is a notable improvement on the performance of earlier versions of the software, and the allegations of slow Windows performance that appeared in one or two reviews elsewhere, though true at the time, are no longer valid.

Incidentally, Aleph One are continuing to extend the Windows driver software to include those less frequent calls currently not trapped, so we can expect further, if less dramatic, speed enhancement. Don't be misled by the slow build up of the Windows title page, by the way. The Windows drivers take over after this has appeared.

The benchmarks table shows the comparison with various PCs, from the antiquated 8086-based XT to a modern 486DX. Dhrystones is a standard speed test for integer processing, whereas Whetstones is a standard for floating point processing.

Naturally, the addition of the maths co-processor chip improves the Whetstones performance, but leaves Dhrystones unaffected. Norton is a benchmark designed to give an overall assessment, rather like the *urban cycle* use for assessing car fuel consumption.

I was interested to see how the Aleph One PC board compared with some of the low-priced 386s and 486s you can buy in the High Street. To this end I compiled a short recursive program to calculate Fibonacci numbers – these are numbers in the sequence 1,2,3,5,8,13 and so on produced by adding the last two numbers in the series to produce a new last number. The main point is to give the processor plenty of arithmetic to do.

I made the program work with floating point numbers rather than integers. Having compiled my code, I saved the executable code on to a floppy and wandered into the local branch of Dixons.

There, among small boys zapping space invaders, I stood out like a sore thumb, the only adult interested in computers, covertly inserting my disk, apparently contaminating the stock with some sinister virus. The timings reveal the leaden performance of cut-down 386 and 486SXs compared to a real 486DX, with the Aleph Board putting in a creditable performance.

Loading Windows

If you have an A5000 or other machine with 1.44Mb floppy drive, you will have no problems loading Windows, but users of older machines with 800k drives will not be able to read the 1.2Mb Windows disks. You will need to borrow a PC and download from it via the serial ports of the two machines.

Alternatively, equip yourself with a large supply (17, actually) 720Kb Dos formatted disks and use the xcopy instruction in Dos to dump Windows on to the smaller capacity disks.

You'll need to copy to an intermediate hard disk directory from which you can delete each diskful of files once they have been copied. To monitor this, you should enable the copy option which lists the filenames as they are copied.

Summing up

I have no hesitation in recommending the 486 version of the Aleph One Card. This is a very well made product that delivers realistic PC performance.

Faster PCs are available, at a price, and those who work primarily on a PC may be prepared to pay for a 66MHz 486DX or whatever.

For existing Acorn owners, however, I have no doubt that the PC card offers the preferable route to twin platforms: It's cheaper, takes up less room on your desk, shares your peripherals and lets you transfer files from one system to the other.

● *Floating point arithmetic comparison*

	Aleph One	Aleph One with maths co-processor	386 PC	486SX PC	486 DX PC with maths co-processor
CPU	486SLC	486SLC	386SX	486SX	486DX
Clock rate (MHz)	25	25	25	20	33
Time (s)	163	24	295	244	7

● *Benchmark comparisons*

	Standard IBM XT	Standard 386SX-16	Aleph One ARM2	386SX-20 ARM3	Aleph One ARM2	486SX-25 ARM3	Standard 486 DX-33
Dhrystones (K)	0.3	3.2	3.3	3.3	6.4	6.5	15.8
Whetstones (K)	-	7	64	65	65	129	129
Whetstones (K) (with maths co-proc)	-	-	1185	1185	2253	2253	5700
BIOS video (Kcps)	1	7	5	6	5	13	34
Direct video (Kcps)	5	37	38	38	50	108	209
Norton SI (v5.0)	1	10	10	10	41	41	71

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Serenade

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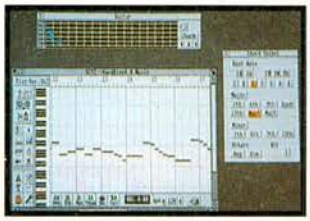

Serenade is a desktop MIDI sequencer for the full range of Acorn RISC OS machines. A great deal of effort has gone into creating a graphical user interface that gives access to the power of Serenade without making it complex to use.

■ Multi tasking 16 track MIDI sequencer ■ Fully RISC OS 2 & 3 Compliant and 1 megabyte friendly ■ Auto start and syncing of Rhythm-Bed from Serenade ■ Auto drop feature allows you to insert notes in real time whilst replaying ■ Guitar window allows chord input offering an alternative to the standard keyboard - it will recognise most common chords (majors, minors, 7ths, etc..) ■ Scores to Rhapsody via Standard MIDI file format type 1 ■ Can generate Real Time MIDI Events enabling real time mixing, panning, record etc with convenient snapshot facility ■ Audition feature allows undo of most functions **Price £ 135.00 inc VAT**

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Life, the Universe and screen saving

Back from her foray into the PD world, Teri Paul reports her finds

SPRING is in the air, the Chancellor is promising an early summer and it's a good as time as ever to give your computer a wash and brush up and maybe a bit of variety which is, of course, the spice of life. The most cost-effective way to do this is with PD and I have a curious collection for you this month.

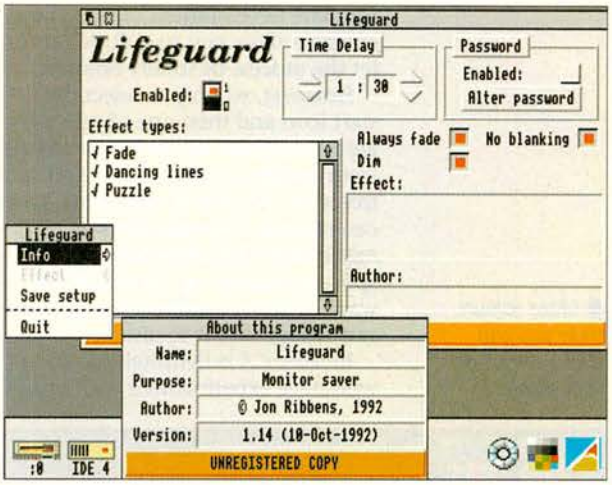
There is a host of screen saving utilities to protect the investment in your computer monitor. On the shareware side there is **Lifeguard** and as with other applications it stops images being burnt into the screen. By setting the delay time – from one second to an hour and a half – the special effect will kick in after this has elapsed and a mere movement of the mouse or touch the keyboard and you're back where you left the screen.

Lifeguard 1.14 was written by Jon Ribbens and registration costs £10. For this you'll receive a free update to the latest version and a range of effects: Archimedes logo, a black screen, digital clock, dancing lines, various fades, sliding block puzzle, rain, bouncing sprites, snow and stars.

Once it's loaded on to your icon bar you can access the setup window. This is where you set the time delay, a password option and turn on the screen saver. It is here where you choose the effects. Select more that one and they will be displayed randomly.

Jon has written Lifeguard to allow you to add other effects written in assembler. Just drag their individual files on to the iconbar, into the setup window, or double-click them and they will be added on the end of the effects list to a maximum of 64.

Lifeguard uses a module called WimpExtension which not everyone will have. However, this module is in the PD and is worth acquiring as several useful programs need it. You may be interested to use its facilities yourself in window handling, dialogue boxes, controlling indirected icons, loading templates, colour menus, ram templates, dragging icons, menu handling, draw and sprite files, immediate windows or memory management.



● *Lifeguard – the shareware program to keep your monitor in good health*

More lively chaos

Staying with Paul's view of the world take a look at **!BreederCA** a program for genetically breeding Cellular Automata rules. A random set of 12 rules is set up for you and ➤

The big Bens

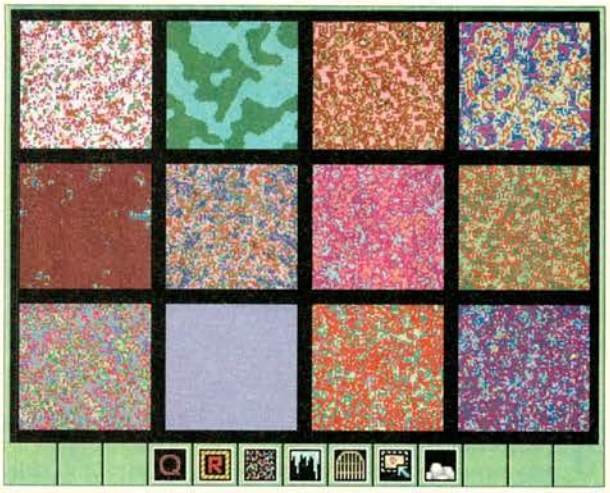
Those of you with some silver among the gold locks will remember a film called the Fourth Dimension which has no connection whatsoever with !4DSolids from John Hedley available from Matt Browne PD.

In fact the latter is a desktop demo which rotates three and four dimensional shapes in a window. A control box will allow you to alter the rotation of the six axes and the number of views seen.

You can also specify whether the surfaces of the shape are drawn opaque or shaded to give a feeling of depth. Clear Coloured is another option which renders the shape as if it was made of coloured glass so more of the structure can be examined. If you opt for Clear White the glass effect defaults to a grey.

Eight shapes are displayed. The first five are three dimensional and for the geometrically minded they are the five Platonic Solids. These are followed by a Pentahedroid, a Hypercube or Tesseract and last but not least comes a Klein Bottle – a topological structure which needs four dimensions to even exist properly.

● *The Klein Bottle needs four dimensions to exist*



● *BreederCA puts you in control of Life*

➤

then a pair can be selected and bred, or a single specimen can be bred from asexually.

The 12 specimens become the parents with 10 or 11 offspring which are selected, bred and so on. Offspring often have genuine traits from both parents and random mutations in the breeding process producing new varieties.

The main program presents you with 12 cells of Cellular Automata all running randomly. Underneath, eight icons put you in control of the ultimate development of life. These controls allow you to quit, restart or let the process be totally random.

However, when you select the start icon and then one of cells they are randomised so run the same rule from another random start. You can freeze the process in one cell so you can examine the structures or manipulate the other cells. If you spot an interesting cell which you want to protect against change, you can always save it to disk.

Breeder CA is definitely for those who have experimented with Life programs before. If you are new to the genre then **Splodge** is an interesting starting place as is 3DLife which we featured some months ago.

So what is the meaning of Life? There exists somewhere in time a plane of squares at different stages of development which can be seen at a glance by its colour. Time passes and evolution continues and the state and colour of the squares changes.

Standing apart and above you can see colour changes sweep over vast areas, strange organic patterns emerge and swirl around. In places chaotic regions grow gradually eating up large areas.

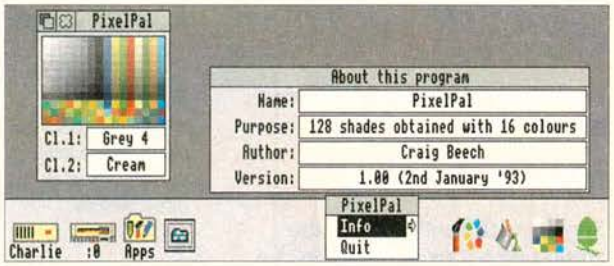
In Life programs you can change the rules. For instance, Splodge provides 16 colours and at each tick of the *cosmic clock* each pixel assumes a state defined by the state of its eight neighbours.

The same rule is applied to every cell simultaneously and values are displayed at the bottom of the screen. Click the mouse and the pointer will appear, then you can start to adjust Life.

You can restart from a random screen, freeze the process, change the colours or the values and so the rules.

If you have multisync monitor you will find the screen size can be increased beyond 256 x 320 and the program will switch automatically to multisync mode when RND is selected. Reducing the screen size will make the program run a lot faster. As we all know, the answer to Life, the Universe and Everything is 42.

● *More colours than you can shake a stick at with PixelPal*



New boys on the block

Skyfall PD are crossing new frontiers with their latest Budgetware disk containing six outline fonts of special interest to Trekkies out there. The Motion Picture, Classic Sixties, Next Generation, TNG Title, Klingon and Computer Monitor come on Budgetware disk 4 which costs £3.95. Do remember, though, that Budgetware is copyrighted and not PD.

Back with PD, Craig Beech's **PixelPal** aims to improve 16 colour sprites by showing the combination of pixel colours required to produce another shade. OK some of you may not need this, but I do. By clicking on the shade you want PixelPal tells you what combination of colours are required in the sprite. You can then use these colours to create blocks of pixels. Very simple and useful.

PD LIBRARIES

8-BIT HOUSES

8-bit Software, 1 Oakwood Drive, Heaton, Bolton BL1 5EE.
BBC PD,18 Carlton Close, Blackrod, Bolton BL6 5DL.
Elk PD, 5 Edward Street, Clifton, Brighouse, Yorkshire HG6 1QR.
Frisky Clams, 37 Cassiobury Drive, Watford, Herts WD1 3AA.
GLM PD, 2 Pierrefondes Avenue, Farnborough, Hampshire GU14 8NF.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
JJF-PD, 49 Hollberry Close, Wingates Green, Redditch, Worcester B98 0QT.
Mad Rabbit PD, 174 Duke Street, Southport, Merseyside PR8 5EL.
ScreenTeach, 21 Highlands Road, Rochdale, Lancashire.
The Wizard - BBC, Ryburn, Thorpe Lane, Cawood, Selby, North Yorkshire YO8 0SQ.
Welsh Boys PD, 88 Queen Street, Barry, South Glamorgan CF6 8EE.
The Yorkshire Boys, 40 Spotswood Place, Gleadless, Sheffield S14 1LE.

32-BIT HOUSES

3PD, 66E Picardy Road, Belvedere, Kent DA17 5QN.
Abyss Software, 35 Grantley Crescent, Kingswinford, Valley Fields, West Mids DY6 9EH.
Alpine PD, PO Box 25, Craigavon, BT63 5UT.
APDL,39 Knighton Park Road, Sydenham, London SE26 5RN.
Arcaynia, PO BOX 1927, Sutton Coldfield B74 3YZ.
ArchAngel, 9 Chancel Court, Chancel Lane, Pinhoe, Exeter EX4 8QE.
ARMistic, 136 Wellesley Road, Ilford, Essex IG1 4LJ.
Busy Bee Computers, PO Box 25, Ormskirk, Lancashire L39 3QR.
Craig Beech, 52 Margeholes, Carpendars Park, Watford, Herts WD1 5AR.
Datafile PD, 71 Anson Road, Locking, Weston-super-Mare, Avon BS24 7DQ.
DataStream, 34 Norbreck Close, Great Sankey, Warrington, Cheshire WA5 2SX.
Diamond PD, 86 Meadowbank, Moor Lane, Holway, Holywell, Clwyd CH8 7EF.
Different Ideas Music, 48 Merthyr Road, Dallington, Northants NN5 7BS.
Digital Illusions, 20 College Road, Wembley, Middlesex HA9 8RL.
Digital Phenomena, 104 Manners Road, Southsea, Hants PO4 0BG.
DigiTech PD, 20 Downing Crescent, Bottesford, Scunthorpe, South Humberside DN16 3LS.
DoggySoft, 7 Blackhorse Crescent, Amersham, Bucks HP6 6HP.
Equinox PD, 27 Station Road, Earls Barton, Northampton NN6 0NT.
Five Star Marketing, 18 Woburn Close, Bushey, Herts WD2 3XA.
HeadFirst PD, 97 Chester Road, Southport PR9 7HH.
I-APL, 11 Auburn Road, Redland, Bristol BS6 6LS.
Kinsway Computer Services, 72 Glencoe Road, Sheffield S2 2SR.
Low Cost PD, 6 Furzeland House, Sheephouse Way, New Malden, Surrey KT3 5PH.
Mad Rabbit PD, 174 Duke Street, Southport, Merseyside PR8 5EL.
Matt Browne PD, 5 Inglefield, Pottres Bar, Herts EN6 1HD.
Moonlight Graphics – Shareware, PO Box 3569, Cape Town 8000, South Africa.
Naked PD, Fayence, Fulford Road, Fulford, Stoke-on-Trent ST11 9QT.
Ozone-Friendly PD, 180 Cumnor Hill, Oxford OX2 9PJ.
Power to the Programmers, 1st Floor, 23 Cooper Street, Nelson, Lancashire BB9 7XW.
RML PD, 24 Penryn Close, Norwich NR4 7LY.
Skyfall, PO Box 2220, Birmingham B43 5R2.
Spidersoft PD, 218 Saville Park Road, Halifax, West Yorkshire HX1 2XS.
The Demon DPD, 3 Marshall Close, Fishtoft, Boston, Lincs PE21 0RX
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Base developments

John Allen takes a look at the 32-bit answer to dBase

S-BASE is a fully programmable database system which fills what was a serious gap in the software available for Risc OS machines. By providing an environment to develop and run a huge range of customised database applications, it fulfils the same sort of role as dBase on IBM PC compatible computers. The 32-bit range needs this sort of software if it is to be taken seriously in business.

Before you get carried away and rush out to buy a copy, be warned this is a product for programmers. If you've not written computer programs before you should consider using other database packages which won't involve having to write program code, such as Squirrel, MultiStore or the Iota range.

It is necessary to write sections of program to get even the simplest of S-Base databases up and running. However, the advantage of S-Base is its great flexibility.

The product comes in three versions:

- **S-Base Personal is the cheapest and allows applications to be created and run.**
- **S-Base Developer is the same as S-Base Personal except that it lets completed applications be compiled into standalone products which can then be distributed to friends or sold commercially – Longman don't expect a royalty.**
- **S-Base Developer Plus allows multi-user applications to be created and run over a network.**

At present only S-Base Personal and S-Base Developer are available and I'll be concentrating here on S-Base Developer and – except for compiling – my comments apply to S-Base Personal as well.

S-Base Developer comes on three disks with two manuals. The first disk contains S-Base itself. The system disk contains the familiar system directory and SysMerge, so you can add these modules to your existing system. There's also the Scrap application, Fonts – with Homerton and Trinity for Risc OS 2 users – and a demonstration database called Video. The third disk is a tutorial.

The tutorial manual runs to 244 pages and guides you through the development and use of a simple address book. This shows you how to use the S-Base development environment. The 252-page reference manual documents the 300 or so commands and functions which make up the S-Base programming language known as S.

To say that S-Base has a steep learning curve is an understatement. You need to sit down for several hours in front of your computer with the tutorial manual and plough through the examples. It gets easier after the first hundred pages, as only then do you produce something that can be executed.

The address book database is provided on the tutorial disk at various stages of development, so it's worth looking at these examples before you start to get an idea of where you are heading.

PRODUCT SPOTLIGHT

Product: S-Base Personal
Price: £99
Product: S-Base Developer
Price: £199
Product: S-Base Developer Plus
Price: £299
Supplier: Longman Logotron, 124 Cambridge Science Park, Milton Road, Cambridge CB4 4ZS.
Tel: 0223 425558
Requirements: Minimum 2Mb ram

Basics

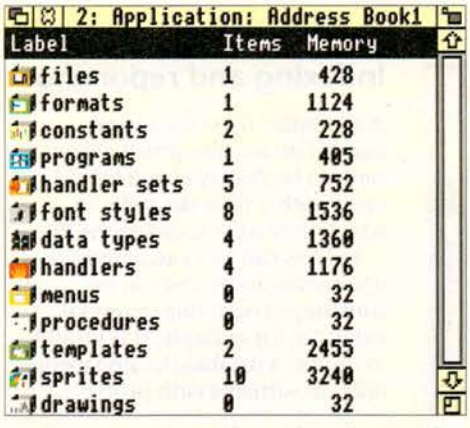
An S-Base database is a bit like a Risc OS application, as it is essentially a collection of related resources. These are items such as files, fields, formats, menus, templates, handlers and programs. Some of these will contain routines written in S code.

All will become clearer if we look at the stages of building a simple database, such as the card record of names and addresses. This would be constructed as follows:

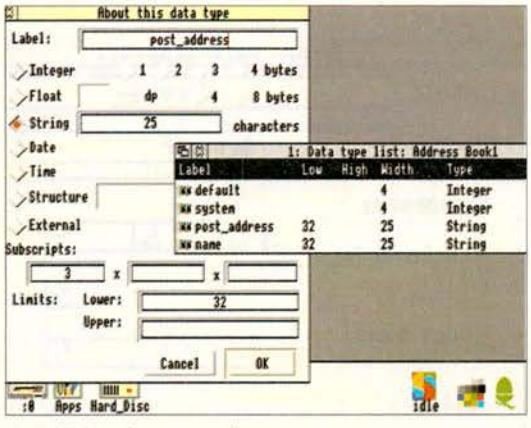
Define the data types for the database fields – for our address database

John Allen (MSc DIC ARCS) moved into journalism after researching interactive computer simulation. John has been programming and using computers for over 20 years. He is a former BBC Radio Science producer and is now producing Mike Carlton's *Morning Report* on LBC Newstalk.

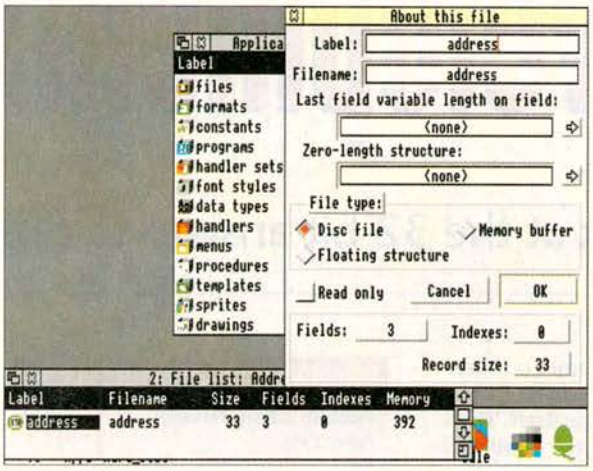
In addition he regularly writes and broadcasts about computers and is the author of *Z88 Pipedream: A Dabhand Guide.*



● *The resource viewer shows the collection of files, fields, formats, menus, templates, handlers and programs at your disposal*



● *Defining data types for an address database requires character strings*



● *Setting up a file is a question of defining the database types to specify the fields needed*

● *The template editor – much more advanced than the standard FormEd*

➤

these probably include character strings for the name and for a multi-line address.

Define a file to contain the database – using the data types to specify the fields within the database.

Design a template for the window which will display each record – using the template editor which is much more advanced than the Acorn FormEd application and uses dialogues rather than menus to set the parameters of a window. This window will contains icons and/or sprites, forming the basis of the database card. The icons supplied are three-dimensional like those used by Impression.

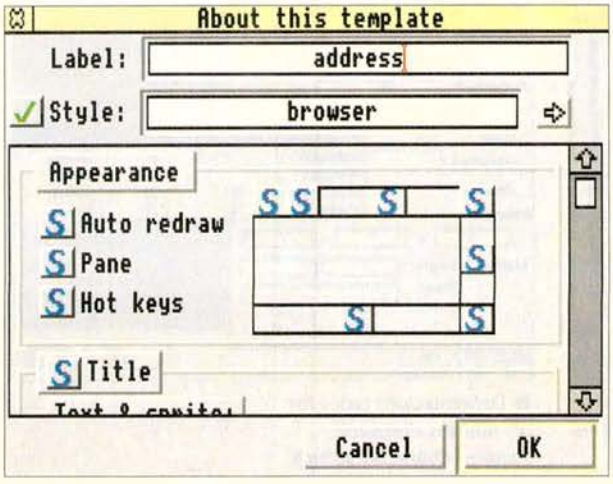
Produce a format for the window – this is a combination of the template and information on where in the template to place the database file fields. This is done by the format generator, which is given the name of the template and the file. It then places the file's fields in the window for the user to drag to the desired position.

Write handlers – to define what happens when any of the icons in the template are selected. These are written in S, using the text editor built into S-Base.

Write the main program ***startup*** – in many cases this will be quite short as most of the code to do things is in the handlers.

Obviously a practical database will be more complex, but you should now have an idea of the work involved in getting even the simplest database up and running. The scope is very large, limited only by your programming skills.

● *The template dialogue boxes are much easier to use than menus when setting window parameters*



Machine requirements

S-Base can, in principle, run on any model of 32-bit machine, but needs at least 2Mb of memory. A hard disk is desirable, but it will run from floppy without too much disk swapping.

The template editor adapts to the version of Risc OS being used so applications developed under Risc OS 2 will happily run with Risc OS 3.0 and 3.1, but Risc OS 3.0 and 3.1 developed applications which use Risc OS 3 extensions will not display their windows correctly when run under Risc OS 2.

Indexing and reporting

It is possible to create several indexes on any file which allow cards to be displayed in a logical order, rather than the order in which they were added to the file.

Indexes can be in ascending or descending order and can be constructed from one or several fields. So, for example, it is possible to display a database in alphabetical order of surname with people having the same surname being shown in alphabetical order of first name.

Indexes are created from the file list viewer menu and it is important to note that all records will still be included in an index created in this way. Sometimes it is desirable to create a selected index to display records only when one or more fields satisfy a specific condition. This has to be programmed using the S commands Select and Filter.

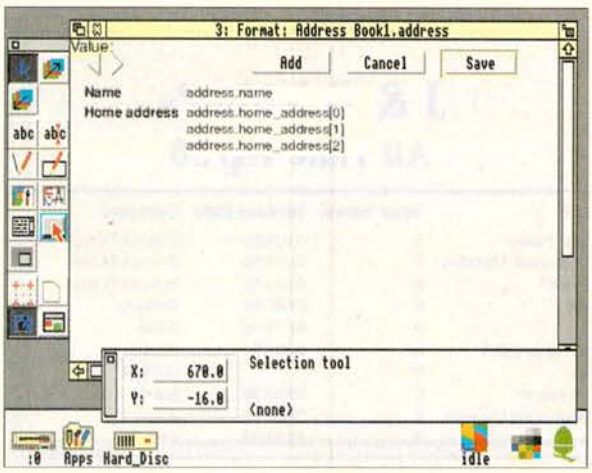
Reports are a selection of records from a file which can be set up as a format and shown on screen or sent to the printer. A handler is used to select records for a report.

There is a more sophisticated type of report called a table. This is something of a cross between a card and a report and can be used to display or print data from a number of records. It can also be used as an editing window to add or remove data.

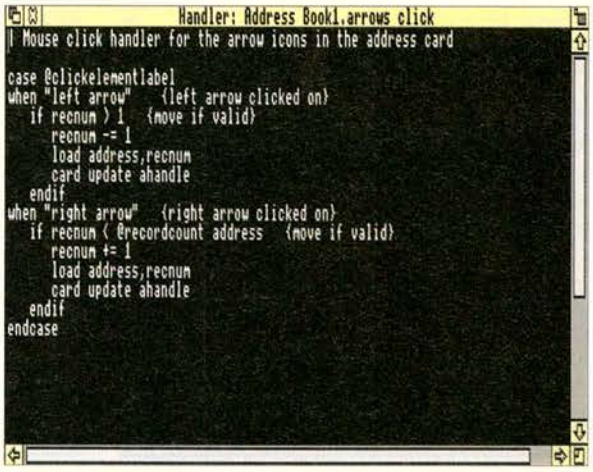
Data import and export

Normally data is entered, record by record, into a card window and output via an S-Base report. Sometimes it is necessary to import data from another database system, or output some or all of the records into a file. Both operations are possible with S-Base.

Normally such transfers would be in CSV format – each field within a



● *The format generator places a file's fields in a window which can then be positioned as you wish*


Handler: Address Book1.arrows click
| Mouse click handler for the arrow icons in the address card
case @clickelementlabel
when "left arrow" {left arrow clicked on}
if recnum > 1 {move if valid}
recnum -= 1
load address,recnum
card update ahandle
endif
when "right arrow" {right arrow clicked on}
if recnum < @recordcount address {move if valid}
recnum += 1
load address,recnum
card update ahandle
endif
endcase

● *Handlers define what happens when any icon in the template is selected*

record is separated by a comma with a carriage return or line feed between records. Most databases and spreadsheets can accept and produce such files and the S-Base *archive csv* command produces CSV files while *import csv* reads them.

Direct transfer of data between applications is increasingly used to mailmerge database data into wordprocessor documents and within the Risc OS environment this generally uses Computer Concepts' Impulse mechanism. Typically the database controls the wordprocessor, taking fields from its current record and adding them into the document at the appropriate position before printing the document and repeating the process with another record.

Serious omission

No high level support is provided for this by S-Base and while it is fair to say that such a mechanism can be programmed, considerable knowledge of the way Risc OS passes messages between applications is required – not to mention a thorough knowledge of Impulse. This is quite a serious omission and would certainly make it difficult to merge data into Impression documents.

CSV files can be used for mail merging into other wordprocessors such as First Word Plus or PipeDream and it is possible to merge a file in a related format into Impression documents using the Importer program to control Impulse.

As S-Base is fully programmable, it is easy to set up relationships between records in different files. Cards can be created containing fields from more than one file as illustrated by the Video application which links title, library and customer cards.

The card for such a display can be set up by the format generator with you writing the program code to link the files. It is also possible to incorporate fields from more than one file in tables and reports.

During development, an S-Base application always starts by displaying the resources viewer when loaded, ready for you to edit the application. Once the database has been constructed it is better to make the application standalone by compiling it.

Compiling in S-Base Developer is very simple. Just select the option from the application list viewer and drag the save icon to a directory on the desktop. The new application will be given a standard icon, but the Sprites file in the application's directory can easily be edited by Paint.

Double-clicking on a compiled application will load it and execute the startup program. It looks like any other application as a compiled application runs just like the uncompiled version except that the resources are stored in compressed form and so cannot be examined by the user.

If an error is found when running ➤

S-Base resources

An S-Base application is a collection of resources which are related to each other. Resources can be of the following types:

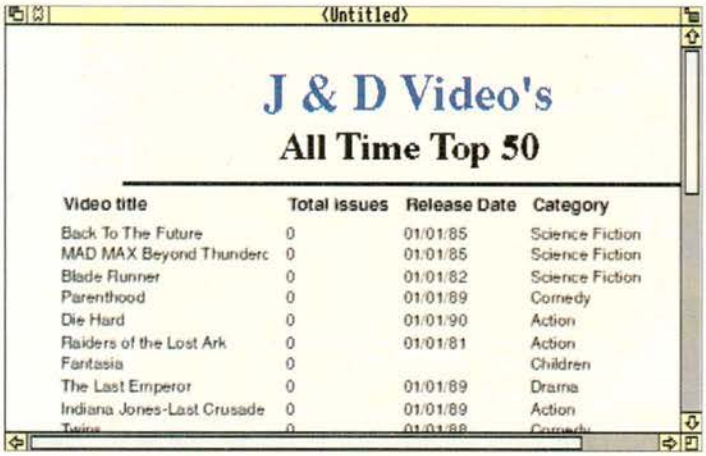
Files:	Where a database is stored. As usual in a database they are a collection of records which themselves consist of a number of fields. An S-Base application can have up to 254 different files active at any one time.
Templates:	The same as Risc OS templates and define the appearance of windows as well as containing Risc OS icons and sprites.
Formats:	Define the layout of data for entry or display on screen or printer. There are three types: Cards, tables and reports. Cards contain the data from a single record while a table allows data from more than one record to be displayed, printed or edited. A template is used as the basis of a format.
Constants:	Represent an expression, string or number and must have a label in upper case characters.
Programs:	Consist of S code to perform an operation. Every application must have a program, startup, which is run when the application starts.
Procedures:	Smaller sections of S code which may be required in different parts of the application.
Handlers:	More S code, handlers define what happens when an event is generated. There will be a handler, for example, to define the action when you click on a particular icon in a particular window.
Handler Sets:	Groups of handlers.
Menus:	Commands that create a Risc OS menu. They can create menus with submenus and ticking and fading of menu items.
Font Styles:	Define font styles for use in templates and formats.
Sprites:	Such as produced by Paint.
Drawings:	Drawfiles such as produced by Draw.

```
Program: Address Book1.startup
| Executed at startup

if @recordcount address > 0  {are there any records in the file?}
   adding_rec = FALSE
   recnum = 1
   load address,recnum
else   {no records so add a new one}
   adding_rec = TRUE
   recnum = 0
   zero address
endif

| Create and display the address card
card new ahandle,"address"
card show ahandle
card poll ahandle
card dispose ahandle
```

● *The startup program is usually short as the handlers deal with most of the code*


(Untitled)
J & D Video's
All Time Top 50
Video title | Total issues | Release Date | Category
Back To The Future | 0 | 01/01/85 | Science Fiction
MAD MAX Beyond Thunderc | 0 | 01/01/85 | Science Fiction
Blade Runner | 0 | 01/01/82 | Science Fiction
Parenthood | 0 | 01/01/89 | Comedy
Die Hard | 0 | 01/01/90 | Action
Raiders of the Lost Ark | 0 | 01/01/81 | Action
Fantasia | 0 | | Children
The Last Emperor | 0 | 01/01/89 | Drama
Indiana Jones-Last Crusade | 0 | 01/01/89 | Action

● *An S-Base report is a selection of records from a file*

➤

a compiled program it will be less user friendly and only report the error number, so the original version may be needed to track down the problems.

Longman Logotron are promising to supply extra facilities, which may include the mechanism to use Impulse, as users' requirements become clear.

It is relatively easy to add extra facilities by writing a procedure library and putting it in the procedures resource of a number of different applications. The procedures will then be available to all programs and handlers.

It is very difficult to compare S-Base with other databases. Without doubt it is more difficult to use than more traditional packages such as Squirrel, MultiStore, FlexiFile, DataPower or budget systems like Impact or Junior Database.

These all allow cards to be developed interactively and contain built-in routines to manipulate the data.

S-Base requires an element of programming skill and at least a little knowledge of the Risc OS environment. It takes longer to develop databases, but S-Base has great flexibility. It is possible to develop databases that work in exactly the desired way with very specific facilities – so the end product will almost always be better for the particular use.

Summing up

S-Base is an application just bristling with raw power. It is what the Acorn range needs, and will silence the critics who say that the machine cannot be taken seriously without a database *like dBase*.

That power and flexibility is not what's needed if you just want to keep club membership records or the like. And, while you do not need to be the world's best programmer to use it, it would be wrong to suggest that people who find it difficult to write simple Basic programs will find S-Base suitable for their needs.

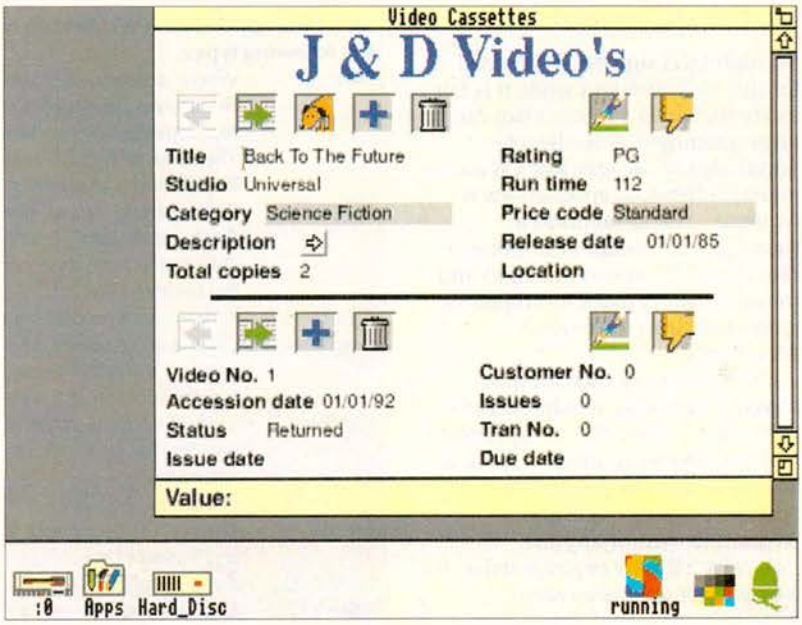
The lack of built-in facilities for direct-merging data into wordprocessor documents could be a drawback in some cases.

In this review I have tried to explain how S-Base is used. If you think you can cope with the extra work to produce tailor-made database applications, it is definitely the best buy package.

S-Base as a program development environment

Although S-Base is marketed as a database system it does contain a comprehensive general language and can be used to develop a wide range of applications that are nothing to do with databases.

It is unlikely that anyone would buy S-Base if they were not interested in databases, but it is easier to build many general applications in S-Base than using Basic and other tools such as FormEd.



● *The Video application is a useful example of just what you can achieve*

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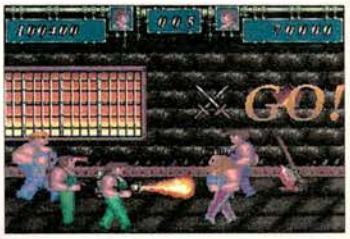

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You've been framed

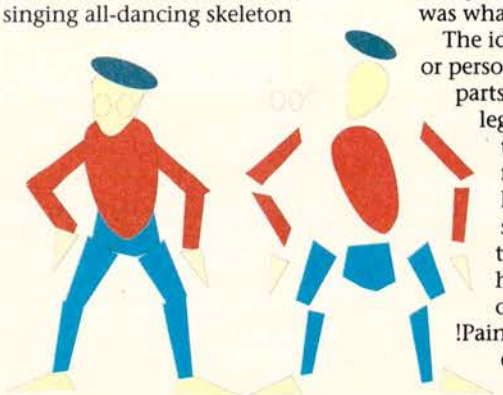
Mike Goldberg shows a simple technique for effective animation

IF a picture paints a thousand words then why can't I paint this article? This is not as silly as it sounds as more information can be derived from a single diagram than can be explained by a million words.

If you look at how much memory is required to hold a saved Mode 15 screen you can see how much information your computer is sifting through each time you see the image on screen.

Despite the enormous number of bytes required we can still create our own animated sequences using a series of big(gish) sprites in 256 colours even on a 1Mb machine – like mine. All you need is !Draw and !Paint.

Ten years ago I created a piece of animation for the old BBC Micro called *Bones* which was an all-singing all-dancing skeleton that received great acclaim. I have not bettered it despite bigger and more powerful machines. The programming was terrible – some things don't change – but the result was what I'd planned for.



● *The basic man... ...going to pieces*

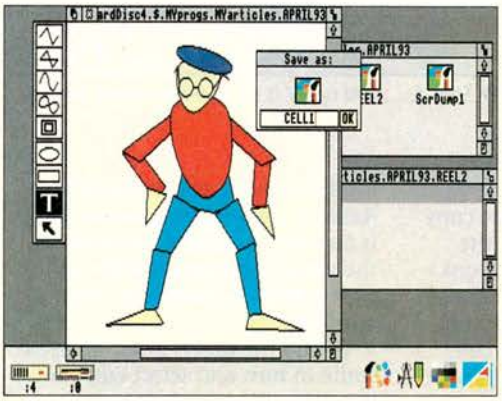
The idea was to create an object or person using various separate parts – head, neck, torso, arms, legs and so on – then move the parts around for each frame of the animation. So here's a way of utilising the supplied applications to do the same. I'll assume you have had some practice with or knowledge of !Draw and !Paint but you don't need much of either.

First, load up !Draw and decide what it is you're going to animate. In this case I have made up a man from 17 separate parts.

● *Step one: Build your man – or whatever*

The more parts you create the more articulated your man will be and how much more expressive he is – you can draw what you like. Now save your draw file as you will need to store a sequence of frames in it.

Load up !Paint as well because each separate frame will be saved from the draw file as individual sprites – if there's a problem with *No Room* alter the screen mode to a less greedy-for-memory one and consult the Task Manager to see what's using up the bytes. Lucky Risc OS 3 owners won't have a problem here, even with 1Mb.



● *Step 2: Grab the area around the figure*

Step 3: Save the grabbed image

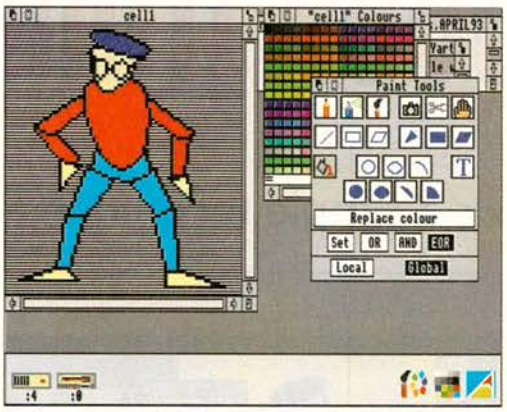
When !Paint is ready click on its iconbar icon with Select to create a new sprite file then click Menu on the iconbar and select *Get screen area*. The pointer now has a little camera attached to it. Grab the image of your man by dragging with Select to open up a rectangle around the drawing and letting go of the mouse button when you've surrounded the whole of your drawing.

A save window will open, name it and then drag it to your newly created sprite file. It's a good idea to name each sprite, as you create it, with a sequential name/number, for example here we use *Cell1* – the number is more important than the name.

Save the whole sprite file – currently only containing Cell1 – to a Filer window, giving it the name *Reel1* or something similar. Resave the sprite file every time you add a new sprite to it, just in case a program crashes and you lose your data.

Now go back to your original draw file and using the Filer menu ➤

● *Step 4: Add a mask to the sprite...*



● *Step 5: ...and apply it to all background areas*

➤

make a copy of it. Load up the copy and alter it to how you want the next part of the animation to look – slightly tilt the head, stretch one of the arms, move a leg or whatever.

Now grab the image off screen using !Paint, just as before, but save this one as Cell2 and save the spritefile with the same name as before. Repeat the process until you are either satisfied with the number of images, halted by lack of memory or fed up.

You may have noticed by now that as sprites all your images will have white and opaque backgrounds. That's fine if you intend to animate just the image itself on a white background but it is far more interesting to mask off the white areas and plot the sprites over a detailed backdrop – even a scrolling one.

To add the masks bring up each sprite in turn and select Edit from the Paint menu and click on mask to tick it. Select the mask (T) colour from the Colours window and use Global fill from the Tools window then click on a white area or pixel.

If you've used a lot of white elsewhere in your image be sure to alter these areas to a different colour first using Local fill before altering the white background. You can then change these areas back to white again when the mask has been added.

Do this for all the sprites and remember to save the spritefile again when you've finished. For a background I created a sprite slightly bigger than my man sprites and called it imaginatively *Background1*.

The listing *Film* demonstrates how to make the movie run using the example here. Only a few minor alterations are needed to make your own work properly which are shown in the table opposite.

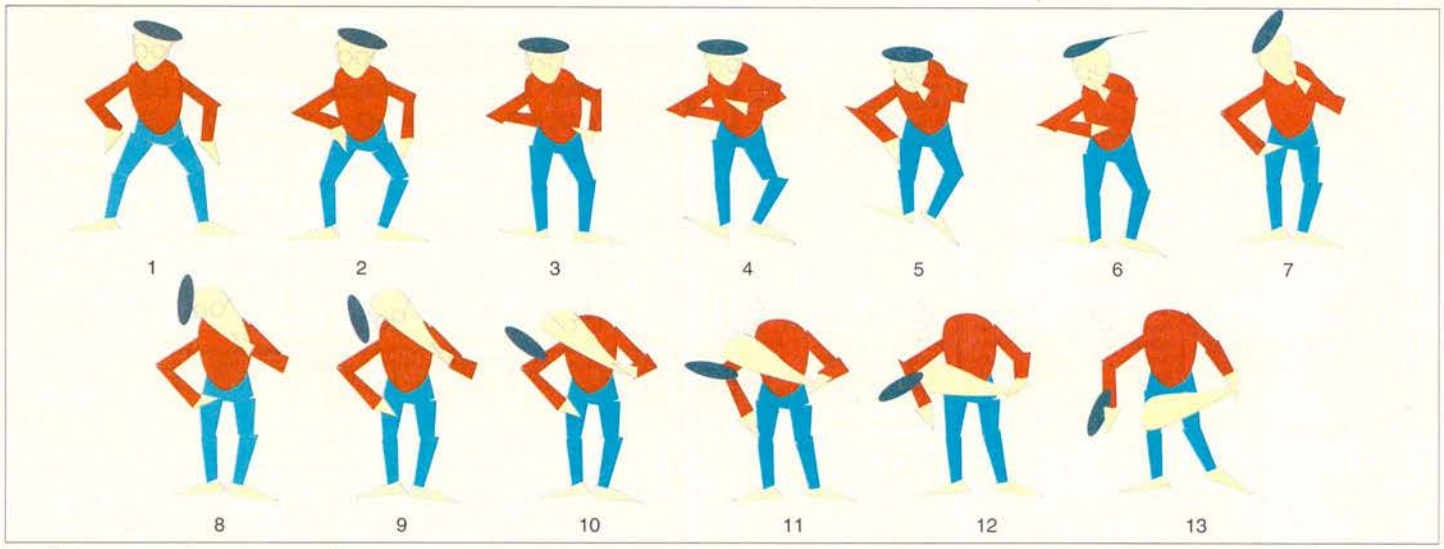
The DATA is very simple. The first figure is the number of the cell you want to see and the second figure is how many times you want to display it. The higher the frame number the longer the image remains on screen.

So if you display each cell for lots of frames you can dispense with the delay at line 380 or use it to govern the overall speed of the film.

The program also provides screen bank switching to avoid flicker so for the screen mode you've used, for example Mode 13, you need to select a screen mode which uses twice the memory, in this case Mode 15, before you run the program.

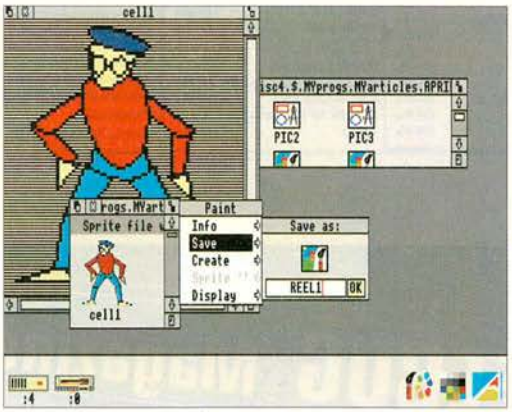
● *Right, that's a take!*

```
  10 REM > FILM
  12 REM by Mike Goldberg
  13 REM (c) Acorn Computing
  20 MODE13
  30 OFF
  40 REM
  50 OS="OS_SpriteOp"
  60 REM
  70 REM  Load in the Spritefile
  80 REM
  90 sprites$="REEL1"
 100 file%=OPENIN(sprites$)
 110 size%=EXT#file%+64
 120 CLOSE#file%
 130 DIM area% size%
 140 area%!0=size%
 150 SYS OS,256+9,area%
 160 SYS OS,256+10,area%,sprites$
 170 REM _____SET UP ONCE ONLY_______
 180 REM
 190 PROCsprites
 200 PROCinit
 210 PROCscreen
 220 REM
 230 Z%=2
 240 cell%=1
 250 REPEAT
 260 RESTORE
 270 REM
 280 REPEAT
 290 Z%=3-Z%
 300 SYS6,112,Z%
 310 READcell%,num_frames%:IFcell%>0 TH
EN
 320  FORK%=1TOnum_frames%
 330 SYS OS,&222,area%,B%(1),BX%,BY%,0
 340 SYS OS,&222,area%,C%(cell%),X%,Y%,
8
 350  NEXT
 360 ENDIF
 370 SYS6,113,Z%
 380 G=INKEY3
 390 UNTILcell%=0
 400 REM
 410 UNTILO
 420 END
 430 REM
 440 REM
 450 REM SORT SPRITES OUT
 460 DEFPROCsprites
 470 num_cells%=16
 480 num_backgrounds%=1
 490 REM
 500 DIM C%(num_cells%)
 510 DIM B%(num_backgrounds%)
 520 REM
 530 FORI%=1TOnum_cells%
 540 PROCsetsprite("CELL"+STR$(I%),C%(I
%),h%,w%)
 550 NEXT
 560 REM
 570 FORI%=1TOnum_backgrounds%
 580 PROCsetsprite("BACKGROUND"+STR$(I%
),B%(I%),h%,w%)
 590 NEXT
 600 ENDPROC
 610 REM
 620 REM Init sprites
 630 DEFPROCsetsprite(string$,RETURN va
lue%,RETURN width%,RETURN height%)
 640 SYS OS,256+24,area%,string$ TO,,va
lue%
 650 SYS OS,256+40,area%,string$ TO,,,w
idth%,height%
 660 ENDPROC
 670 REM
 680 REM INIT
 690 DEFPROCinit
 700 x%=184
 710 y%=x%
 720 X%=640-x%
 730 Y%=512-y%
 740 BX%=640-x%
 750 BY%=512-y%
 760 VDU24,480;256;800;800;
 770 ENDPROC
 780 REM
 790 REM SCREEN
 800 DEFPROCscreen
 810 FORI%=2TO1STEP-1
 820 SYS6,112,I%
 830 COLOUR128
 840 CLS
 850 REM
 860 VDU24,X%-32;Y%-32;X%+2*x%-4+32;Y%+
2*y%-4+32;
```



● *This is my complete sequence of images*

Line	Text	Notes
20	MODE13	Are your sprites a different mode? If so, change this.
90	sprite$ = "REEL1"	You want the name of your spritefile here.
470	num-cells%=16	How many cells (separate images) did you make?
540	..."CELL"+STR$(I%)...	Are your sprites called "CELL" plus a number? No? Alter "CELL" to the right name for you.
580		If you have a background change the name as appropriate.
380	G = INKEY3	A small delay between frames which you can adjust along with the number of frames shown per image.



● *Step 6: Save all the sprites together as one file*

```
 870 GCOL128+63
 880 CLG
 890 REM
 900 VDU24,X%;Y%;X%+2*x%-4;Y%+2*y%-4;
 910 GCOL128+25
 920 CLG
 930 SYS OS$,&222,area%,B%(1),X%,Y%,0
 940 SYS OS$,&222,area%,C%(1),X%,Y%,8
 950 NEXT
 960 ENDPROC
 970 REM
4990 REM DATA CELL numbers
5000 DATA1,2
5010 DATA2,2
5020 DATA3,2
5030 DATA4,2
5040 DATA5,2
5050 DATA6,2
5060 DATA7,2
5070 DATA8,2
5080 DATA9,2
5090 DATA10,2
5100 DATA11,2
5110 DATA12,2
5120 DATA13,2
5130 DATA14,2
5140 DATA15,2
5150 DATA16,24
5160 DATA15,2
5170 DATA14,2
5180 DATA13,2
5190 DATA12,2
5200 DATA11,2
5210 DATA10,2
5220 DATA9,2
5230 DATA8,2
5240 DATA7,2
5250 DATA6,2
5260 DATA5,2
5270 DATA4,2
5280 DATA3,2
5290 DATA2,2
5300 DATA1,24
5310 REM DATA last frame num=0
9999 DATA0,0
```

GET IT RIGHT

```
 10 =    0 0     220 = D1AD 0     450 =    0 9     680 =    0 1     910 = 419B 9    5150 = E41F D
 12 =    0 0     230 = 157E 7     460 = 7BB1 7     690 = 344C F     920 = 6A37 7    5160 = 9D5B 2
 13 =    0 0     240 = CB1B 7     470 = 36FD E     700 = 7E2C 9     930 = 8E48 C    5170 = AA6B 1
 20 = 6054 4     250 = BFBA 6     480 = F3DD F     710 = 4C32 F     940 = 4A23 F    5180 = 2FFB 2
 30 = E16F 9     260 = 9FF8 8     490 = D1AD 6     720 = 9F45 9     950 = 2C83 0    5190 = 18CB C
 40 = D1AD 9     270 = D1AD 8     500 = 7FC9 B     730 = 4788 1     960 = EDOF 1    5200 = 419B 8
 50 = 5BC4 9     280 = BFBA A     510 = C0F8 4     740 = 33D5 4     970 = D1AD 9    5210 = 76AB 1
 60 = D1AD 5     290 = A455 5     520 = D1AD 1     750 = EB18 6    4990 =    0 9    5220 = E99F 1
 70 =    0 5     300 = 6379 4     530 =  317 D     760 = 5583 3     5000 = 403E E    5230 = DEAF D
 80 = D1AD D     310 = F01C 5     540 = E3A9 A     770 = EDOF B     5010 = 196E 7    5240 = F29E 4
 90 = A367 0     320 = BABB 8     550 = 2C83 3     780 = D1AD 6     5020 = 2E5E 2    5250 = C5AE 8
100 = AC8D B     330 = DB77 4     560 = D1AD 2     790 =    0 6     5030 = ABCE C    5260 = 9CFE 0
110 = 8747 B     340 = DE4D 2     570 = E868 9     800 = F5B9 8     5040 = 9CFE A    5270 = ABCE 7
120 = 81A4 6     350 = 2C83 3     580 =  364 C     810 = 1509 D     5050 = C5AE F    5280 = 2E5E 9
130 = 8543 7     360 =  8E1 3     590 = 2C83 1     820 = 3559 4     5060 = F29E C    5290 = 196E C
140 = E19B 1     370 = 15CD 9     600 = EDOF 2     830 = A76B B     5070 = DEAF 0    5300 =   13 9
150 = BF36 4     380 =  9AD 3     610 = D1AD 4     840 = 7A16 8     5080 = E99F 6    5310 =    0 9
160 = 9873 7     390 = C0D3 C     620 =    0 4     850 = D1AD C     5090 = 76AB D    9999 = 574C 0
170 =    0 7     400 = D1AD C     630 = 70E6 2     860 = 8DAD 2     5100 = 419B 0
180 = D1AD 6     410 = 53CE 4     640 = 3134 9     870 = ED99 6     5110 = 18CB A
190 = 9617 3     420 = FD2E D     650 = 3966 5     880 = 6A37 F     5120 = 2FFB C
200 = DEBB 7     430 = D1AD 6     660 = EDOF 3     890 = D1AD 8     5130 = AA6B 7
210 = 9538 F     440 = D1AD 9     670 = D1AD 1     900 = 1B04 8     5140 = 9D5B 8
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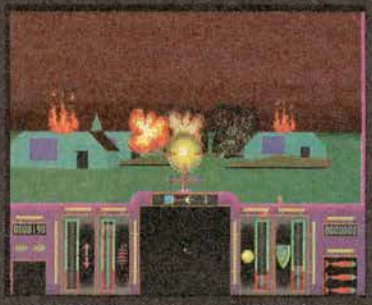

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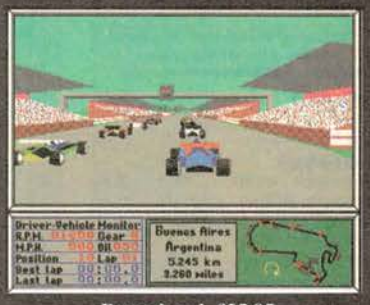

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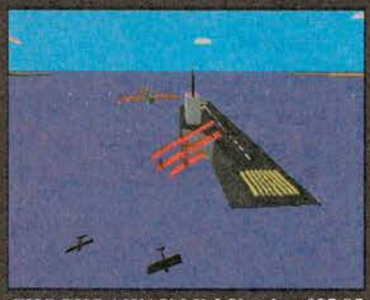

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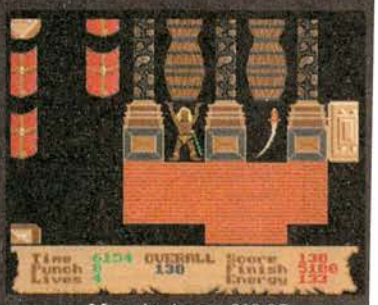

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Battlechess

...she's a witch

IN the movies, chess is usually played by brooding eccentric professors, as a way of showing us how intelligent they are. In real life though, great champions seem mostly to be loud, nervous and deeply strange people, who have a desperate desire to win. The great majority of players – and that's most of us at one time or another – don't fit either image.

Computer versions of chess have been around for almost as long as computers themselves. However Battlechess, now available for Acorn machines, is rather different from most. Not really aimed at brooding professors or obsessive Grandmasters, it has graphics that are fun (and sometimes downright silly) but still provides a solid challenge to players of all levels.

Originally, a game of chess represented a battle: A sort of abstract war game of medieval armies. With that in mind, Battlechess gives you playing pieces that fight out their moves on the screen.

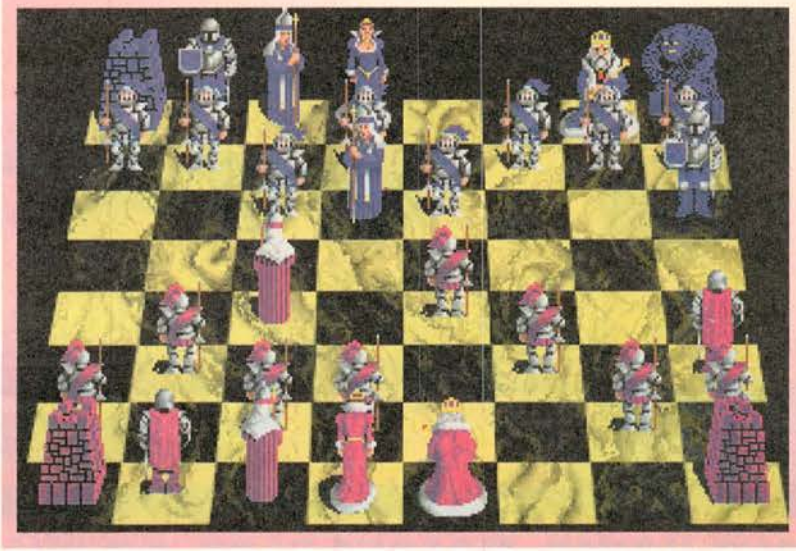
On the standard board you get 3D graphics of people (and castles) that march around when they're moved, and fight each other when pieces are taken. Yes, that does mean the castles march and fight too – it's *that* sort of program.

Battlechess can be played as a two-player game, or with one player against the computer at any of 10 skill levels. The program can even play itself for demonstrations. There are optional time limits for each move, the program can offer suggestions and, if a little desperate backtracking seems in order, there's a way to take back moves.

When a piece moves it's with an animation that is usually clever and frequently ingenious. Pawns are short men-at-arms, Queens are *femmes fatales*, and Knights are big and armoured and barge past anyone else, even royalty.

The rooks are the oddest of all: Little fortress towers that change into lumbering rocky monsters and stalk menacingly around the board.

Each combination of pieces gives a different combat. It's worth making some unusual moves just to see what happens. Queen takes Bishop with a blast of magic, Pawn takes Knight in a highly unchivalrous manner, and Knight takes Knight in a little homage to a certain Python film: *It's only a flesh wound*. The King himself, if called upon to fight, proves to be a devious old monarch indeed.



If all this gets a little too silly and you want chess without the frills there's always the 2D option. This switches you to an entirely conventional chess simulation, with standard silhouettes for the pieces. It's even possible to change from one view to the other during play.

The 2D version does run faster than the 3D. This is largely because there are no fights and the machine just has to consider its moves, not access the appropriate animation.

Being frankly a little rusty at chess, and having no Grandmaster handy, I can't tell you much about the high levels of play. However, there are a good many levels available past the point at which the machine was wiping the floor with me, so it should be able to offer a challenge to just about everyone.

> 'It's worth making some unusual moves just to see what happens'

In terms of appearance, it's worth noting that this is a direct conversion of a program written for other machines. Thus, the graphics don't use the full clarity (and speed) of which Acorn machines are capable. Not that they're bad and they make up for any limitations with the ingenuity of the animations.

This is a program with a lot of appeal to the beginning and middle player and it should give some laughs to any but the most seriously-minded of experts. If you're after a chess program it may as well be one that gives you the option of flair and fun along with the standard moves.

Keith Martin

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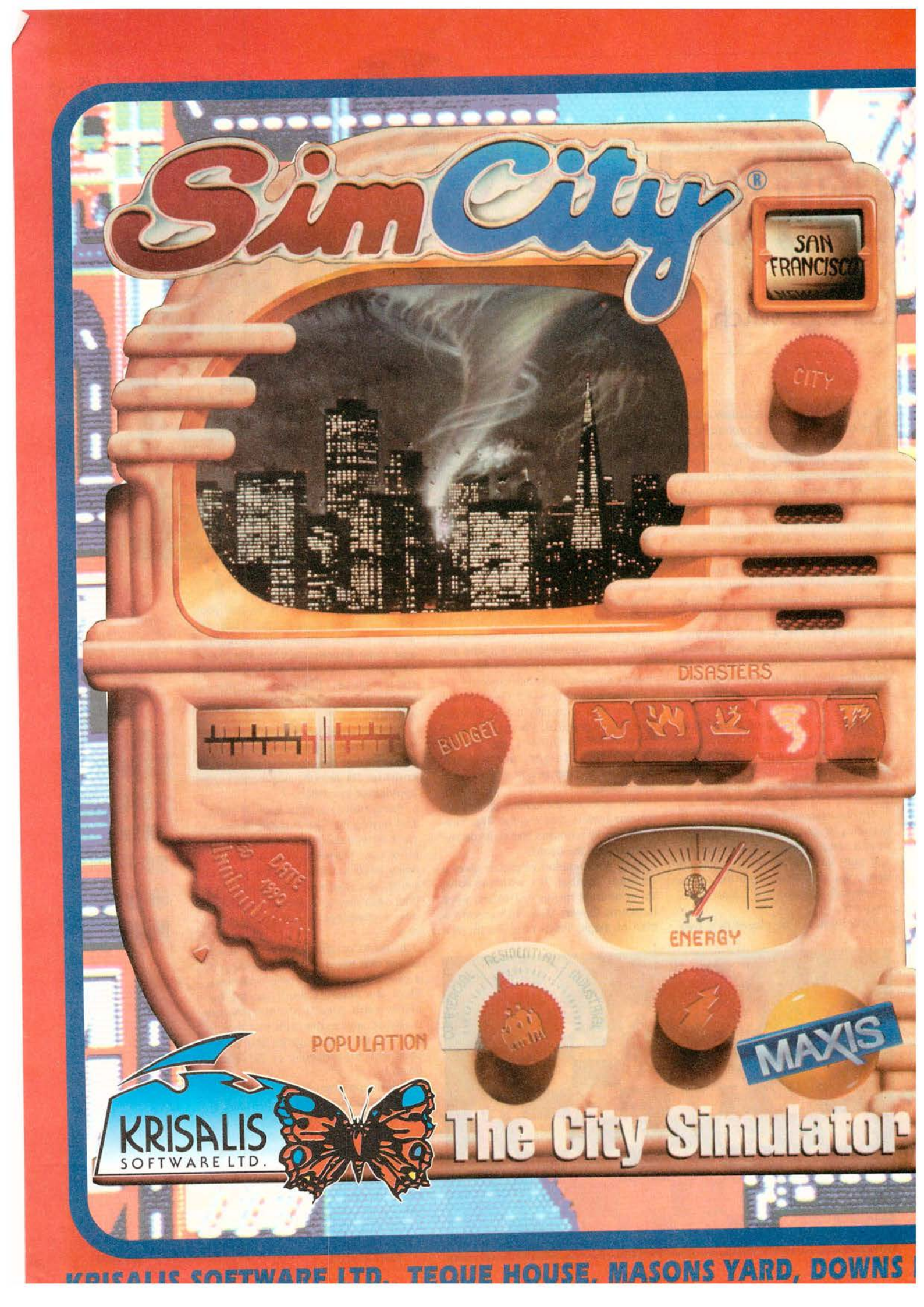
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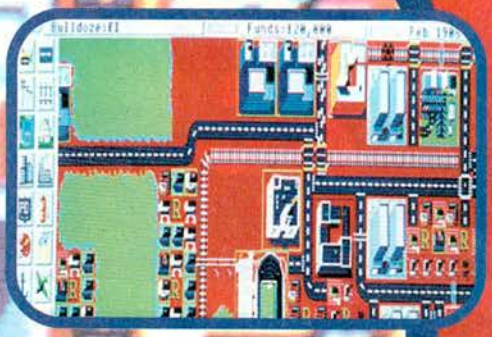

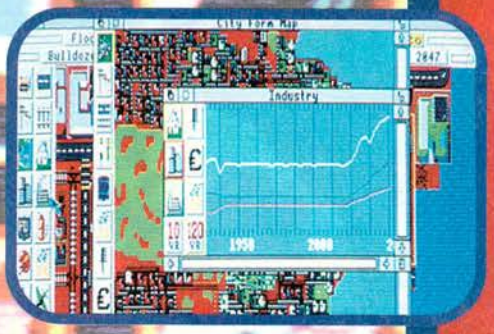

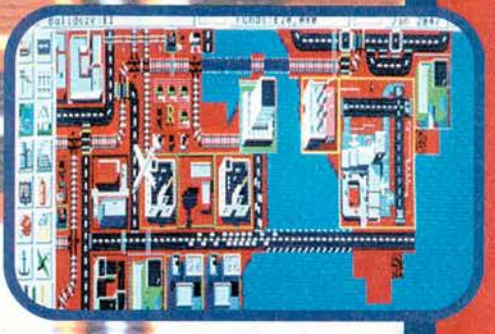

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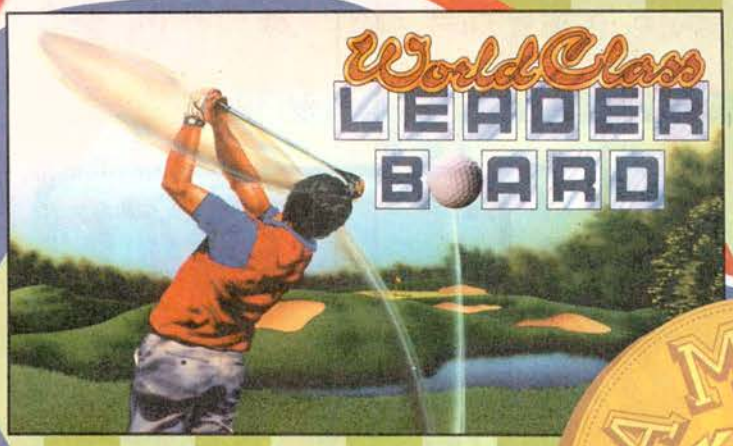

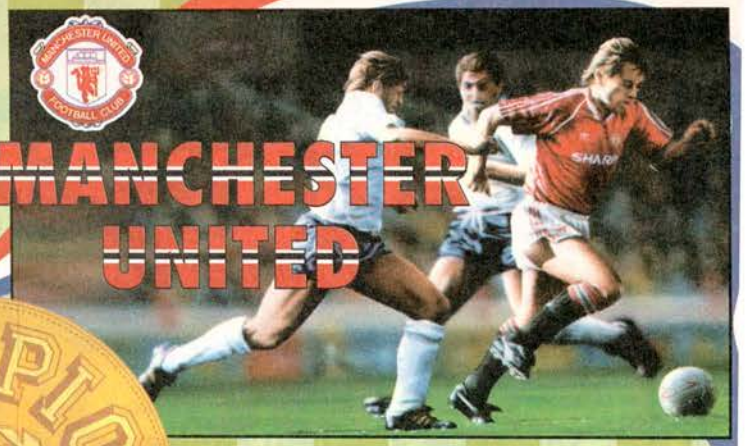

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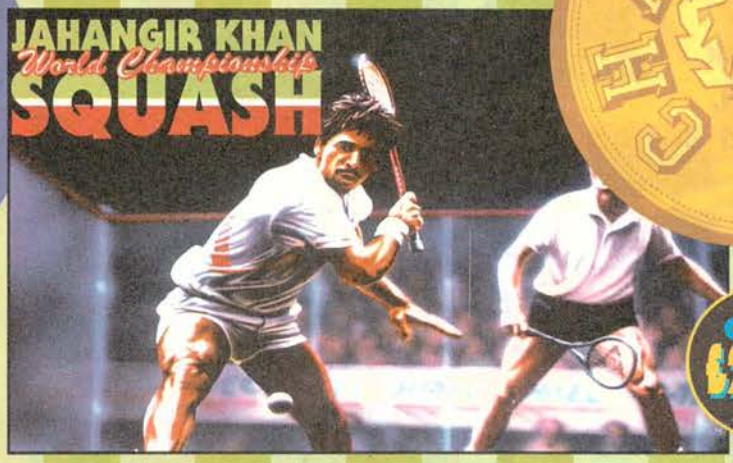

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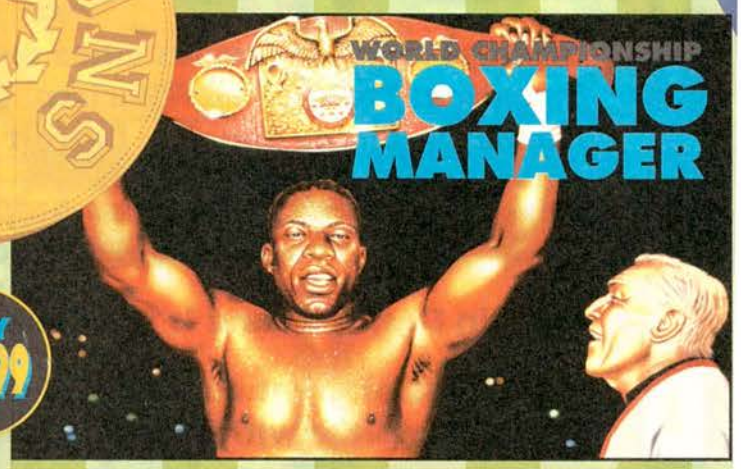

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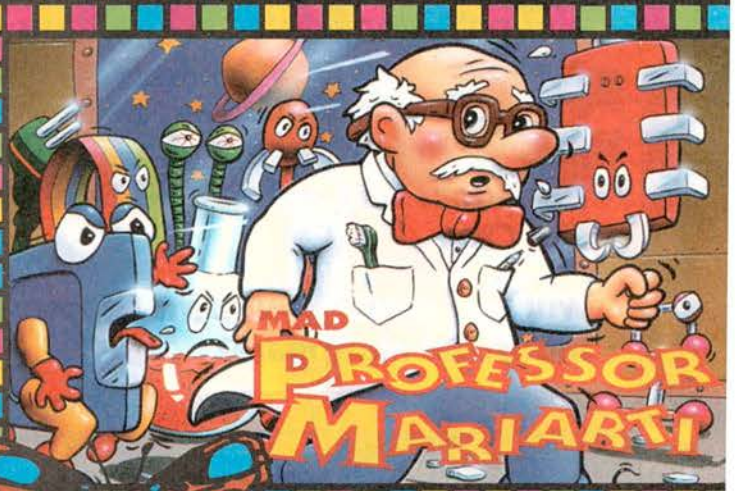

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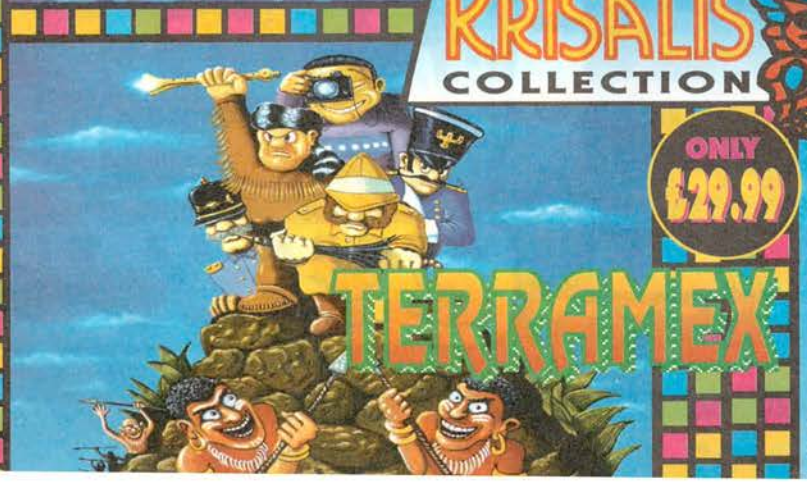

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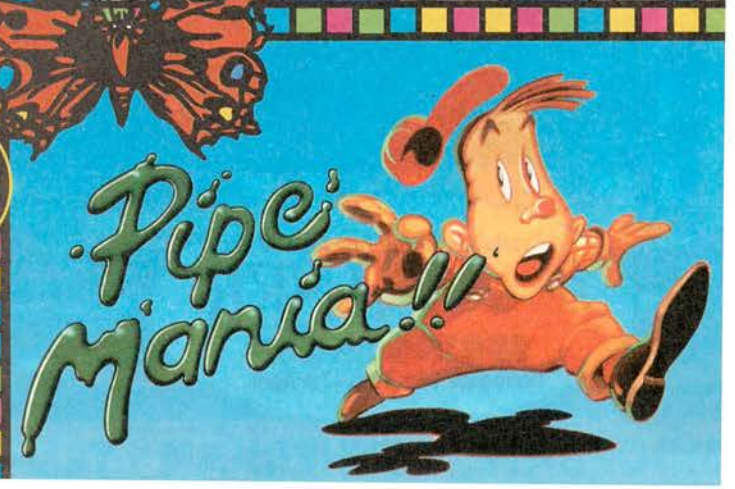

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SpySnatcher

...adventure in the underworld

AT last. I had begun to despair of ever being able to review this offering from Topologika. You may recollect a minor furore about the memoirs of a retired Secret Service agent some years ago which led to the public admission of what we all knew anyway: Civil servants have a tendency to be economical with the truth when it suits them.

SpySnatcher is loosely based on the ideas that emerged at the time of the Spycatcher trial, and a mole is available for hunting down.

There are an awful lot of in-house jokes and some excruciating puns as well. The opening scenario is as follows: MI7 chief, Sir Arthur Cayley (Z to his friends) is deeply worried. The plans for the new Sonic Macrothrodule may well have been leaked.

Kept in his office safe, the plans had clearly been disturbed by someone or other. Z estimates that it would have taken at least an hour to remove the plans and copy them. You are therefore summoned to do some unofficial investigating in an attempt to unearth and unmask the mole. Once you have succeeded you can then go and join Sir Arthur and Superintendent Hardy (Special Branch) who are having a quiet booze-up in the local pub, The Cloak and Dagger.

The game size is described as *moderate* and the difficulty level as *medium* but don't let that rush of modesty influence you, it depends on what your basis of comparison is, and in this case it's probably Acheton – a simply huge and fiendishly taxing adventure.

You are given a couple of helpful clues at the beginning. You are told you must, at all costs, avoid being discovered while you find out as much as you can. You are also told that a newly-recruited Security guard patrols at around 7pm. You thus know immediately that you will be up against a move-counter. All other information should be treated as befits your character: Cultivate a nasty, suspicious mind and you'll get along just fine.

The game parser has the usual flexibility that we have come to expect in good quality adventures, so you can enter quite lengthy and complex instructions. At the same time, though, simplicity pays on occasions. For example, if you enter a darkened room (lots of those) the command ON is sufficient to illuminate your surroundings.

I find it irritating to have to open a door every time I need to go into a room – in adventures, anyway – and I'm pleased to report that SpySnatcher doesn't compel you to do this. Similarly, most objects are fully described so the need to use the command Examine is minimal. Points are awarded for manipulating items rather than for discovering them.

You start the adventure at 6pm, so you have some sixty moves before needing to worry about that security guard – and you'll need every one of them, I can tell you. Each move uses one minute of time, but what are termed *mode of play* commands such as Look or Save do not penalise you.

If you get well and truly stuck, an online help system is available to provide answers to questions such as *What do I use the wotsit for?*. Three levels of hint are available, and if they aren't enough then you are welcome to drop me a line – or Topologika, for that matter.

Now it's coded clue time: You'll need to do a spot of safe opening: It's a combination safe, and you need to be familiar with a Christmas song and have some mathematical know-how as well. I had to ask what a wossname, err Lemniscate, was.

You may well solve this puzzle and then get dumped out of the game for some reason or other. If you do, you possibly will have to start from scratch since, every time the game boots up, the combination may have changed.

If you get into the safe, I strongly recommend that you make careful notes on the dossiers to be found therein. If you don't, you'll have a very eggy face in due course. One of the best ways of outwitting that security guard (hiding doesn't always work) is to have an identity crisis – something all middle-aged mole hunters are prone to. One thing you'll be glad to know is that a snippet or two of salacious reading matter can keep him glued to the spot in times of crisis.

SpySnatcher is a simple game to map, since much of the gameplay takes place in MI7 headquarters, but it contains a challenging series of puzzles that will keep you scratching your head for many a long hour and have you laughing quite a bit, too. If the recession hasn't left you utterly skint, it's an absolute bargain and highly recommended.

Mad Hatter

```
Miss Pell's office                                          5
------------------------------------------------------------
The time is about 6 minutes after 6.
It is pitch dark.
>on
You manage to find a light switch and turn it on.
You are in the office assigned to Miss Pell, the secretary to Sir Arthur Cayley.
The owner of this room is clearly extremely efficient by nature, for, unlike her
chief, Miss Pell has an office that is furnished purely for efficiency. You
suspect that, like many bosses, Sir Arthur lets his secretary deal with the main
problems of administration. Various office equipment can be seen here but
nothing that seems worth investigating. There is a door out to the east.
There is an appointments book here.
There is a memorandum here, written in a neat clerkly hand.

The time is about 7 minutes after 6.
>read memorandum
The memorandum bears the following message:

   How many turtle doves were there?

   7, 8, 5, 5, 3, 4, ...

   Single am I, but perfect.

   A lemniscate.

The time is about 8 minutes after 6.
```

> An online help system is available to provide answers

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BladeDancer

...into the twilight zones

> "Word puzzles are made up of riddles, anagrams or questions"

Just as I was beginning to think that the market for RPGs was dead where the BBC Micro was concerned, up popped Blade Dancer. It's not easy to categorise briefly but, for those of you with long enough memories, it very much reminds me of Black Crystal which appeared on the Spectrum eons ago.

The storyline is that simple one beloved of RPG designers: A demon has been let loose and your job is to destroy it by assuming the character of Archer, Warrior or Wizard. You can choose your gender and there is also the option to be a vegetarian – for reasons which will eventually become clear.

Nine pieces of a pentagram have to be collected from four counties labelled Human, Le Cretian, Goblinoid and Silthilian and the whole program comes on five disks. Apart from an incompatibility with the Watford Digitiser Rom, you should have no problems running Blade Dancer. Sideways ram is searched for and you then have the option to use it. I had no trouble running the game on my unexpanded BBC B.

Having chosen your character, you are then given a glimpse of your appearance with your likes and dislikes – a bit of whimsy being indulged in by the programmers – and then you get the message *Travelling to County One.* Since the Boot disk, Home Town, is labelled zero you now need to insert disk one in the drive for the game proper to begin.

You will then be confronted by a rectangular map showing basic topographical details: Your position is indicated by a flashing cursor. The game begins with your character positioned in the top left-hand section of the map. You now have a choice of entering the zone indicated by the flashing cursor or moving to an adjacent zone and entering that.

Once you have entered a map zone several possibilities offer themselves. You can search the entire area at the touch of a key and you will then be told if it contains anything of use. You *must* travel completely through the zone by first using the X key to move right followed by the scroll key (S) until you are invited to enter the shop which is a feature of the end of each zone.

You can expect to encounter randomly generated monsters that will attempt to do you a great deal of no good. Naturally, you will bash back and an icon bar at the bottom of the screen will show both your success and that of your opponent.

Death for either character is signalled with a *Beam me up, Scotty* routine and, if it's the monster who has gone to that great dustbin in the sky, the power level assigned to the opponent's section of the icon bar will be restored to maximum.

Your own power will need to be restored at the shop by taking sustenance and here's where the vegetarian/carnivore options come into play. Naturally, munching – whether veggie or carnie – will cost something and it is very easy to eat into the 200 gold coins assigned at the start of each section. If you die it's back to the very beginning and you'll be asked to insert the Home Town disk.

At the heart of the game lie a variety of more than 150 puzzles. There are four different kinds but each can readily be identified as you will find your progress through the zone blocked.

Word puzzles are made up of riddles, anagrams or questions – and you must answer correctly before the character barring your progress will let you pass. So, for example, you had better know what an adult caterpillar is called.

Other puzzles are solved by collecting objects which will placate the character barring your way. Since you can only carry three objects at a time, and you can only store objects in zones where no other object exists, careful mapping is essential while you build up a picture of where the puzzles are and where the possible solutions lie. An added complication is that the characters barring your way on the hardest puzzle level can also act aggressively.

While Blade Dancer is attractively packaged and modestly priced, it does have certain limitations. Because of the mode it is written in, there is no colour and the scrolling and animation leave something to be desired where smoothness is concerned.

I found it a minor irritation that, once I had mapped an area, I still had to enter every zone and fight my way through when I thought I knew which objects I needed to collect in order to solve a puzzle.

I would have preferred to be able to move through the map at ease, enter a zone and collect the required object, fight my way out and then see if I had the puzzle sussed.

I couldn't detect any character development either. In RPGs you can usually expect Experience Points or something similar. Last, but perhaps the most serious flaw, there is no save game facility so you have to complete a county in one playing session.

If you enjoy a game that provides entertaining and – at times – challenging puzzles mixed with bouts of vicious combat, Blade Runner is worth a look.

Mad Hatter

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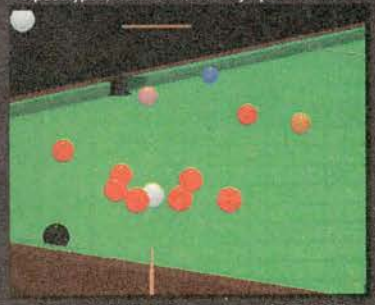

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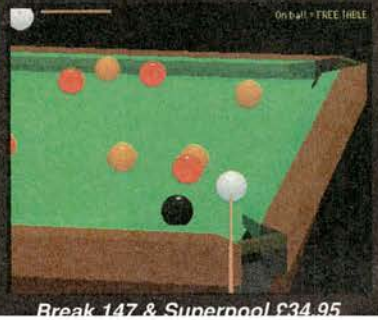

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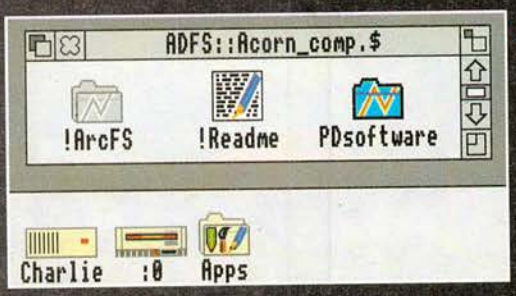
In and out of archives

FEELING a bit adventurous after managing to unpack, load and run the programs which came with the machine, you may be confident enough to load some files from a friend or even access a couple of PD libraries only to be met with a normal-looking folder with a flash motif.

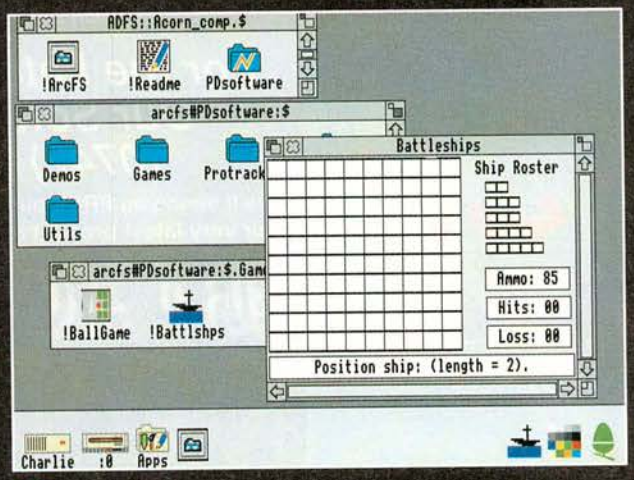
PD Libraries – and both the Acorn Computing cover and subscription disks – cram as much on to their disks as possible by using a piece of software that squeezes files into archives.

Disks that contain files that have been compressed into archives usually come with a cut-down, copyright-free version of the archiving software so that you can get at the programs.

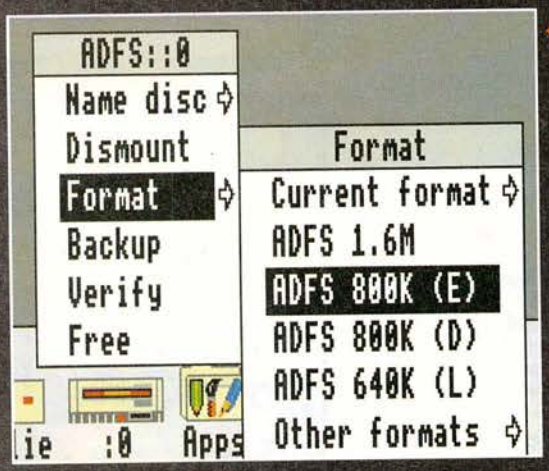
So here's what you do to get the programs out:



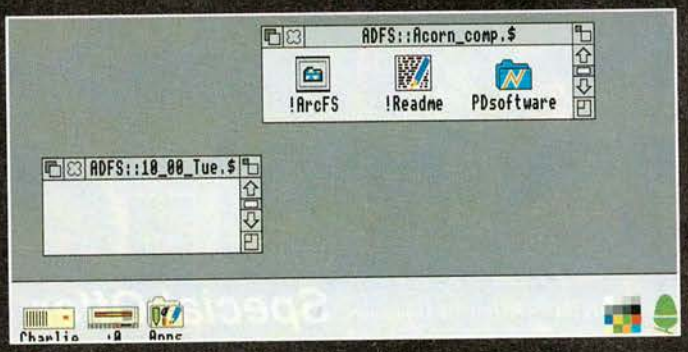
1 Just double-click on the archiving software, such as ArcFS, or on the archived folder and ArcFS will load to the iconbar automatically.



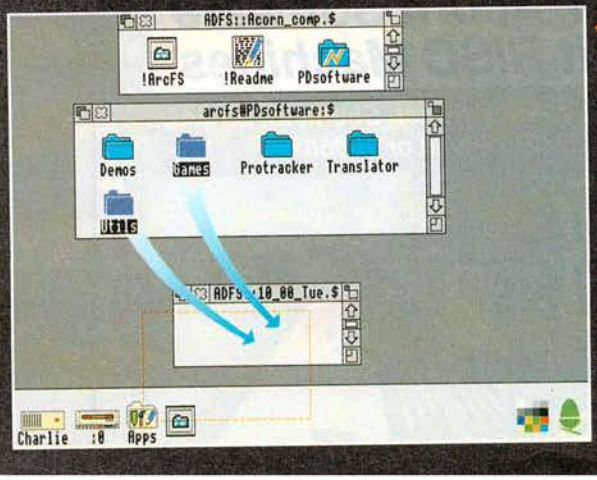
2 You may be able to run the software by simply double-clicking in the usual way. But some programs are very hungry for memory and won't run with the de-archiving software loaded as well. The only answer to is de-archive the programs on to separate disks.



3 Format a fresh floppy disk...



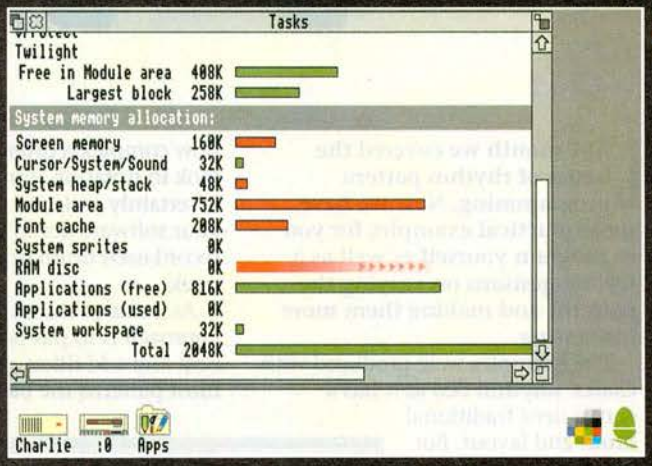
4 ... click on the disk drive icon and an empty window will appear on your screen. Remove the disk and replace with the one containing the archives.



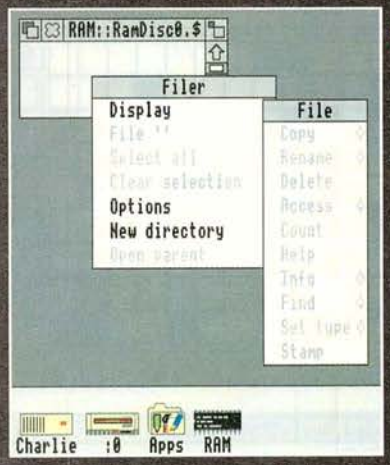
5 Open this disk and drag the folders you want out of the archive window and into the empty window of your newly formatted disk. You'll be asked to change disks as the contents are transferred from one disk to another. If you have a hard disk you can drag the programs here. If not, a ram disk speeds up this process significantly though if you have a 1Mb machine some programs will need so much memory when unpacking that you'll still have resort to the first method.

Pam Turnbull begins a new series featuring common problems and solutions for those new to Acorn's 32-bit machines

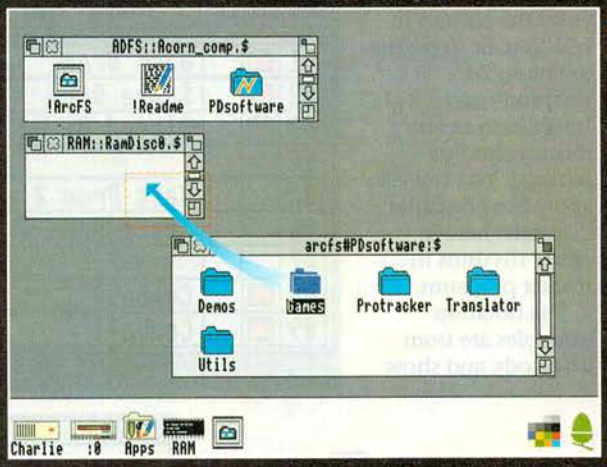
6 To make a ram disk – which acts like a second floppy disk but disappears when the machine is turned off or reset – click Menu on the Task Manager icon and select the Task Display option. On Risc OS 3 just click Select on the Acorn (Task Manager) icon.



7 A window will appear with all the settings for your machine. Move the window down using the scroll bars on the right until you can see the System memory allocation section. The seventh option is *RAM disc* which will show 0k free.



8 A black icon like a chip will now appear on the iconbar and can be treated exactly the same as the floppy disk drive. Open the ram disk by clicking Select on the icon.



9 You can now drag the archived folder from your floppy disk to your archived disk.

10 Replace the floppy disk with the newly formatted disk and drag the folders from the ram disk to the new floppy disk. You can now run the programs in future from the floppy disk without having to worry about archives.

● *Next month we'll cover that seemingly tricky subject of Risc OS 3.10 printer drivers. If you have any other topics you'd like to see covered in this series please write to Newcomers, Acorn Computing, Europa House, Adlington Park, Macclesfield SK10 4NP.*

Archiving software to look out for

!ArcFS

Probably the most commonly used archiving software and used on *Acorn Computing*'s MegaDisk. De-archiver is !ArcFS and PD, archiver is !ArcFSr/w and is commercial from Software 42 (109 Ferry Road, Hullbridge, Essex SS5 6EL). Very easy to use.

!SparkPlug

Again very popular especially with those who want to transfer files on to PCs. De-archiver is !SparkPlug, archiver is in two versions !Spark and !SparkFS both from David Pilling (P.O. Box 22, Thornton Cleveleys, Blackpool FY5 1LR). It can handle a lot of different formats.

!PackDir

A public domain package that compresses with complete directories into one file. Simple but effective.

Squash

Acorn's own utility. Archives individual files and comes with Risc OS 3 as standard.

Compression

A different approach, it compresses each file individually intercepting loads and saves as they occur. A commercial product from Computer Concepts (0442 63933).

Banging your ow

LAST month we covered the basics of rhythm pattern programming. Now we have some practical examples for you to program yourself as well as a few suggestions on varying the patterns and making them more interesting.

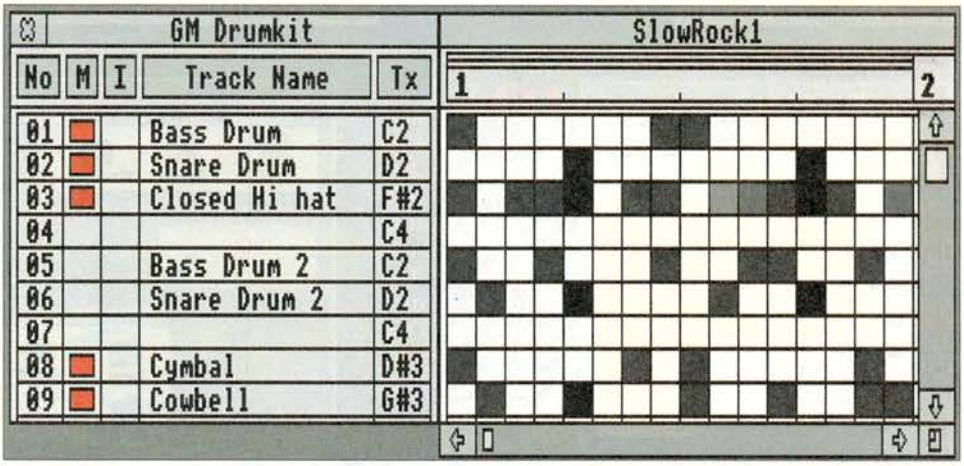
The examples were produced with Clares' Rhythm Bed as it has a convenient traditional drum grid layout. But you could use Studio 24's drum editor or enter the pattern in real-time or step-time in Studio 24, Rhapsody or Inspiration or any music recording package. You can also apply the principles discussed here to create rhythms in tracker programs.

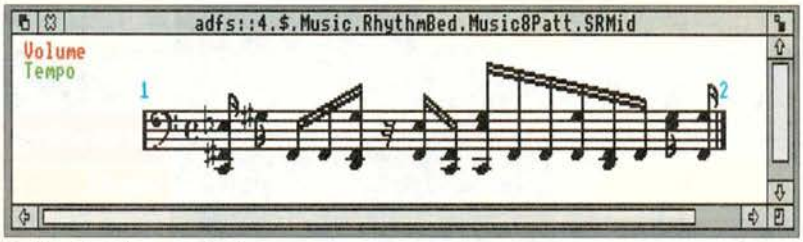
The notation examples are from Rhapsody and show how complex a drum pattern can look in notation form. A drum grid is certainly easier to work with but if your software doesn't have one, record each drum on a separate track.

As a rule of thumb, a good approach is to put down the basic beat and add fillers over the top. In most patterns the basic beat or groove is carried by the bass and snare drums although that's not always the case.

Slow rock

The first three tracks, below, show the basic Slow Rock rhythm which we'll build upon. Try a tempo of 80 but adjust to taste. It's a fairly





● *The first three tracks show the basic Slow Rock rhythm*

Programming with Rhythm Bed

If you use Rhythm Bed, set the Initial Depth parameter in the Values/MIDI/Velocity menu to 12. If any hits need accenting, it's easy to click them up to 15.

It doesn't matter in which order the drums or the Midi notes appear although it's traditional to start at the bottom of the keyboard and work up. However, if you find that the drum sounds you use a lot are a long way from the bass and snare sounds, for example, it's easy to create a new map with the sounds you want near to each other. That's one of the beauties of having a mappable drum system.

The drums on the screen shots are mapped to GM but the drums have been put in order to suit the patterns rather than follow the notes up the keyboard. If you plan to use the patterns over Midi, create a suitable drum kit first.

Create alternative drum lines and use the M (Midi) and I (Internal) toggles to mute tracks you don't want to hear.

n drum

Ian Waugh shows you how to create DIY percussion patterns

standard rock bass/snare pattern but with a slightly more interesting hi-hat line than the usual row of one sixteenth notes.

For an even more traditional bass drum line, move the second bass drum hit back a one sixteenth note.

Beats two and four are accented and, if you can see it on the screen shots, the hi-hats vary in velocity to avoid the machine gun effect.

The second set of bass and snare tracks are an alternative pattern – don't use the two sets at the same time – it's rather busier and works well as a fill.

Once you've got the basic pattern down you can add other drums to it. If you're not a drummer this is the hard part. Rather than scatter hits on the grid at random, concentrate on one drum at a time. If you are creating a one- or two-bar pattern which you intend to loop, remember that not every bar should be busy – space is important too.

If a piece is in 4/4 time, work out a little sub-rhythm lasting one or possibly two beats. Play the pattern as you are working on new drum lines. You'll get a feel for the rhythm and realise that a pattern doesn't have to be particularly busy to be effective.

The cymbal and cowbell tracks add interest but you wouldn't want them playing on every bar throughout a song.

Disco rhythm

The top screen over the page shows a disco rhythm based on one sixteenth notes. The first three tracks hold the basic rhythm. Again be very careful to avoid the machine gun effect on the hi-hats.

The bass and snare drum may seem repetitive but that's disco, providing a constant beat for dancing. We can make things more interesting by varying the hi-hat lines.

The open and closed hi-hats go in pairs but again, don't play more than one pair at a time. The fourth pair is really starting to loosen up the pattern.

You can add congas to give the beat a Latin feel and a cowbell and handclap for added interest. These are good additions for Euro disco material but again, you probably wouldn't want them all through a song.

You can see, by studying the hi-hats in particular, how a one-bar pattern can be divided into groups of four one sixteenth notes. Beats ➤

Once more with feeling

Hitting the right drums at the right time is only part of the process. Do your drum patterns ever sound flat and mechanical?

Some musicians try to avoid this by recording a complete drum track in real-time from a keyboard. You can lay down the bass and snare first – or even do them one at a time – followed by hi-hats and then other percussion.

This has the advantage of retaining human timing and the chances are similar patterns in consecutive bars will not be exactly alike, further adding to the human feel.

The disadvantage is that if you decide to change the format of the song it may not be so easy to cut out or paste in a few bars.

If you do use the pattern approach there are a few tricks you can do to improve your patterns and make them sound as if they are being played by a human rather than a machine.

The first involves altering the velocity of the drum hits. Do your one sixteenth note hi-hats sound like a machine gun? All the notes probably have the same velocity.

Change the velocity in the editor or event list. Accent the notes on the beat and change the velocities of the other notes by random amounts. This assumes that the drum sounds in your instrument respond to velocity information although most do.

Another trick is to use two or more different hi hat sounds to add variation. You can do this on some instruments by altering the pitch of a drum sound and assigning it to another Midi note number. If your instrument doesn't support detuning of drum sounds in this way, try applying a little pitch bend. That often works.

What we're after is the natural change of timbre which occurs because a drummer doesn't hit a drum in exactly the same place every time.

Another ploy is to throw in random drum hits throughout the song – a double bass drum hit here, an extra closed hi hat here. This avoids the feeling that the track was constructed from two patterns linked together.

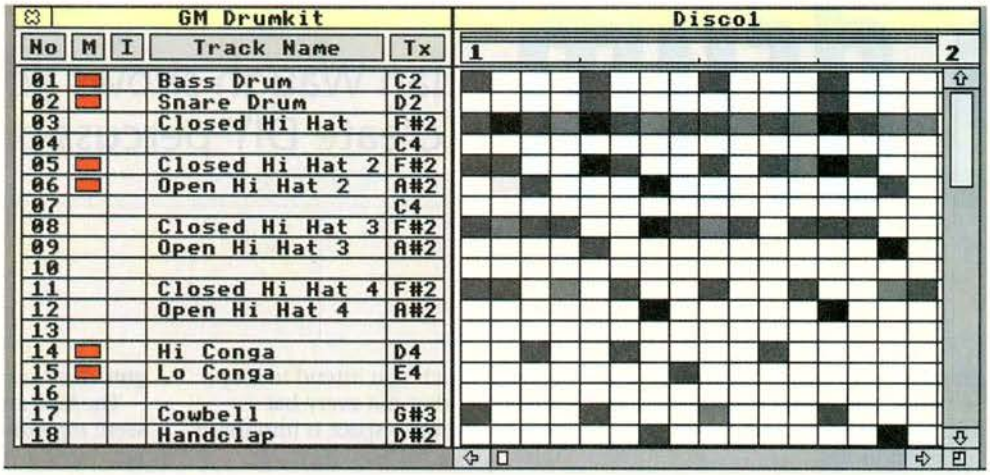
The most vexed question concerning drum tracks is whether to quantise or not. This is something for you and your ears to decide. Dance music and anything requiring a solid beat usually benefits from quantisation.

If your sequencer has a partial or *human feel* quantise option this can help tighten up a track without losing the human touch altogether.

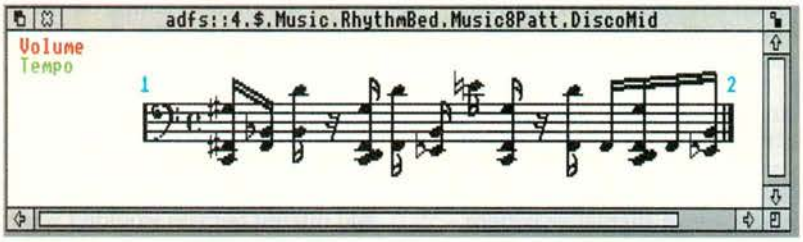
A random quantise function can help put back some feeling into a track you have recorded in step-time. However, as this is random you may have to tweak a few hits afterwards.

Finally, explore the use of exotic percussion. I'm not suggesting you add agogos or a timbal to a rap song but the addition of a sound not normally associated with the type of music you are writing can make it quite distinctive.

While you are constructing your drum patterns, it's a good idea to keep each drum on a separate track. They're much easier to edit that way and you can always combine them into one track later on.



➤ one, two and four in the second hi-hats pattern, for example, are exactly the same. Experiment by playing a grouping with a different drum sound.



● *A disco rhythm based on one sixteenth notes*

Hip hop

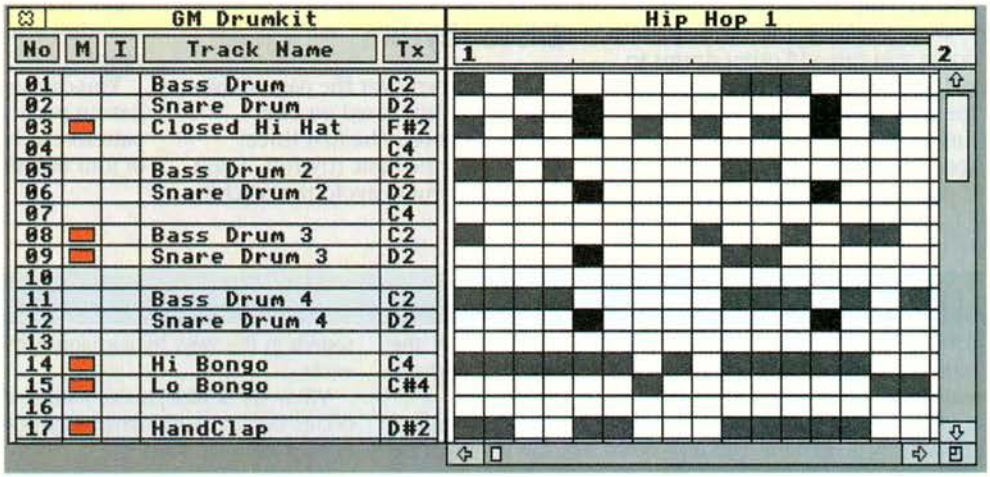
Hip Hop owes a large part of its existence to drum machines as some Hip Hop patterns are physically impossible to play. Few drummers could sustain the fourth bass and snare pattern for long and the handclap pattern is quite difficult to play – it's doubtful whether anyone could keep it going for a whole song.

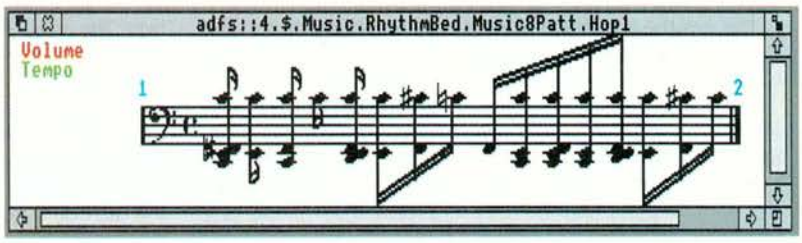
But we're not talking about pyrotechnical paradiddles. Hip Hop is characterised by the bass drum which essentially sets the groove. This is why we have several bass drum alternative. The mainstay of the rhythm is the straight eighths on the hi-hat.

Hip Hop is intended to be mechanical in many cases and this is the one instance where a machine gun effect is often acceptable. The bongos almost produce a machine gun effect – only the missing one sixteenth note prevents it.

Most Hip Hop rhythms have an accented snare on beats two and four – snare 3 is the exception – and are generally two-bar patterns. Place two sets of bass and snare drum patterns one after the other to create a two-bar pattern.

● *Next month we'll look at the process of creating music using track-type sample-based programs.*





● *Several bass drum alternatives are given here*

Building your own patterns

As you experiment with drum patterns you will find several alternative drum lines which you like. By mixing and matching different parts of the pattern, even swapping individual beats of the pattern around, you will discover new patterns of your own.

Try joining two or more patterns together to create a two- or a four-bar pattern. Most songs are written in two, four and eight bar phrases and it's often effective to have a little variation between one bar and the next – but don't overdo it otherwise it will end up sounding like the musical equivalent of a patchwork quilt.

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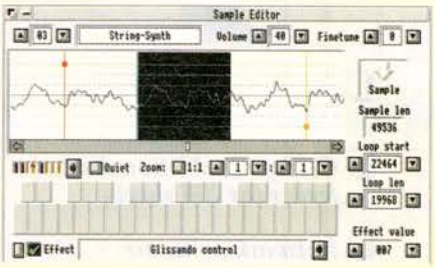
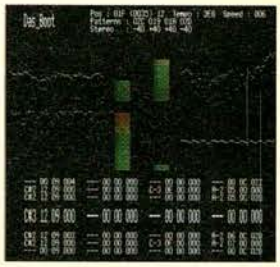


Built in Sample editor, allows you to Cut and Paste parts of the sample. You can try out any of the 40 different special effects, and define a repeat loop by dragging visual markers.



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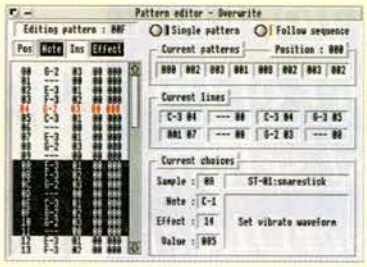

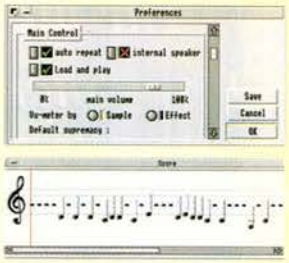

The Pattern Editor, used in conjunction with the Musical Notation score display, makes editing a track very easy. Once created each pattern can be slotted into the sequence, wherever you wish. Cut and Paste, Copy, Transpose, Exchange, etc... facilities are offered to enhance flexibility.

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For those requiring a little more flexibility, a complex search equation can be built up using mathematical, and Basic Operands.

Of course, Archivist also provides a Search and Replace facility, plus a fast Primary & Secondary Sort routine.

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HIRES 4

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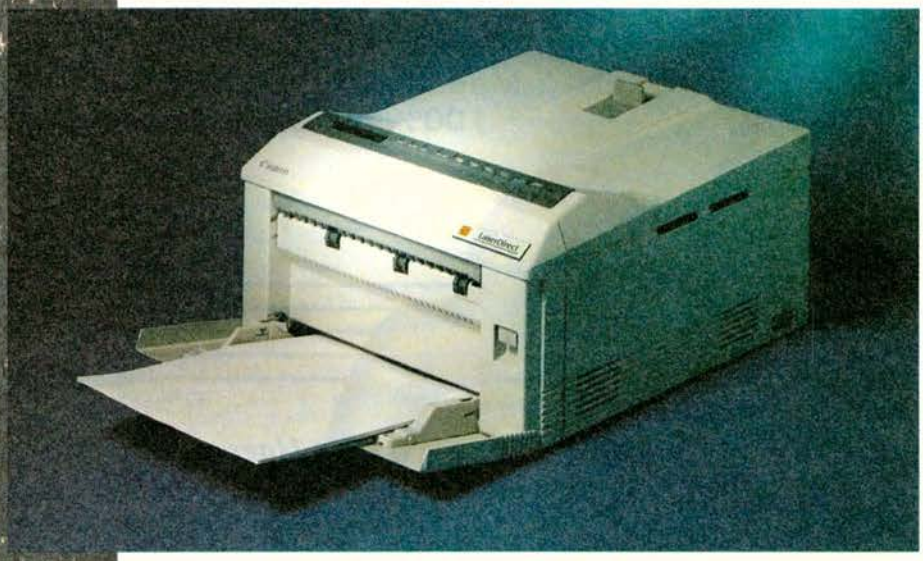

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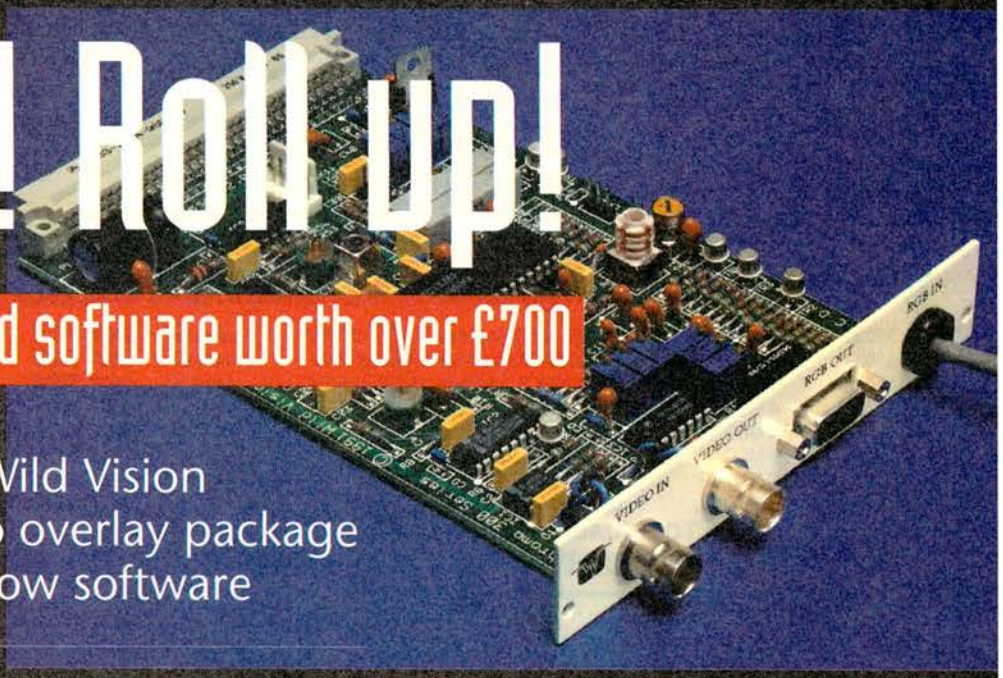

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1: What is the colour depth of Acorn Replay files?
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b) 12-bit
c) 16-bit
d) 24-bit
e) 32-bit

2. Who is the screen legend who takes the starring role in the latest Richard Attenborough film?
a) Tallulah Bankhead
b) Errol Flynn
c) Charlie Chaplin
d) Buster Keaton
e) Mary Pickford

3. Who was the first British monarch to be seen on film?
a) William III
b) Victoria
c) Edward VII
d) George V
e) Elizabeth II

4. Which was the first moving picture to include a sound track?
a) The Jazz Singer
b) Birth of a Nation
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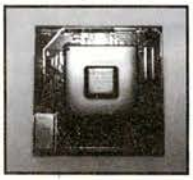

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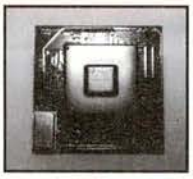

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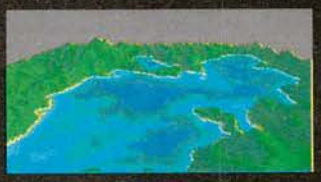

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Way of the Electric Fist

Mike Cook's latest project really packs a punch

THIS month I was watching a video recording of some program I had missed and when it came to an end I found myself watching, like you do, the tail of some older recording, in this case an old Games Master from the first series.

On it, contestants were trying to destroy a meteorite by punching it. Well I know that most computer games require a certain suspension of disbelief but the thought of destroying a meteorite several miles across with a punch did strike me as ludicrous even by computer game scenarios. This was an arcade game but it struck me that I could possibly make a home computer version.

Just three weeks earlier I had seen, in an electronic supplier's catalogue, a new entry for piezo-electric cable. Thinking how useful that would be I had bought some and was now wondering just what useful thing I could do with one and this was the perfect introductory project.

The piezo-electric effect is one where a mechanical force is converted into an electrical force. This is quite widely used in electronics, from the stable crystal oscillators controlling your computer to the hand-held spark gas igniters. The trouble with most piezo-electric materials is that they are crystalline and therefore not flexible.

Glue, resin and rubber

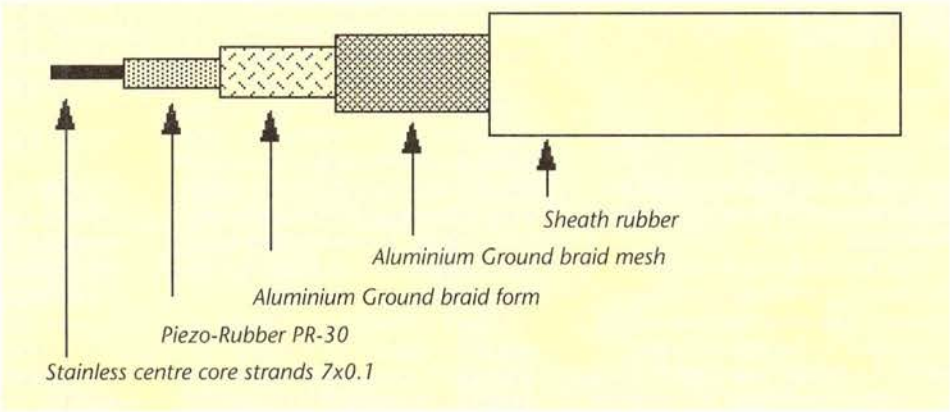
However, the last few years have seen the development of many different piezo-electric materials from glues and resins to rubbers. It's the rubber that makes the piezo-electric cable possible. What you have is a lightweight, sensitive, flexible and tough transducer that is well suited to a number of different monitoring situations.

It is produced in the form of a coaxial cable of complex construction, see Figure I. The secret comes from mixing piezo-electric ceramic powder into conductive synthetic rubber. When stress is applied between the centre core and outer sheath a voltage is generated.

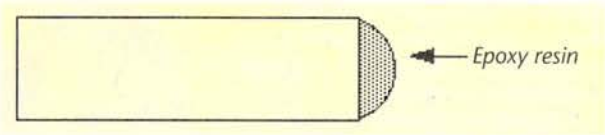
Note that this voltage is only generated while the stress is being applied – while the stress is *changing* it's ideal as a motion detector.

The first problem is to connect up ➤

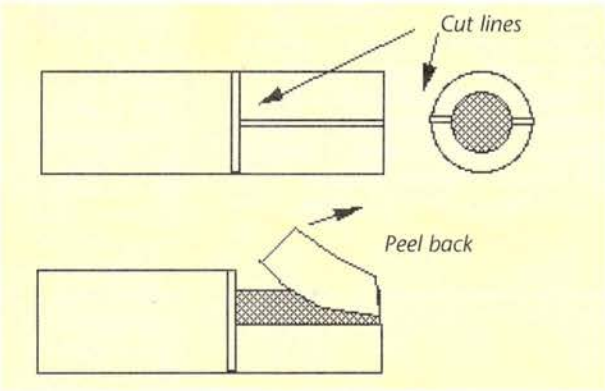
Mike Cook is a senior lecturer in Maths and Physics at Metropolitan University of Manchester. He has written over 100 articles and is the only person to have had something published in every issue of *The Micro User/Acorn Computing*.



● *Figure I: The structure of the piezo-electric cable*



● *Figure II: Terminating the cable end*



● *Figure III: How to strip the piezo-electric cable...*

➤

the cable to normal wires and is a little more tricky than you might at first think.

The end of the cable needs terminating to prevent the ingress of water and moisture that will, in time, destroy the piezo-electric effect. To do this you need to fill the end with a small bead of epoxy resin or silicon rubber as shown in Figure II.

Now the other end needs connecting to a normal coaxial cable so the sheath needs to be removed. This is harder than it sounds because the sheath is made of transparent rubber so it's a little difficult to see where you are cutting.

To help this the manufacturers suggest that you put a spot of dye on the end of the cable but I managed without, using a sharp art knife. Figure III shows how this is cut but be careful to apply enough pressure to cut the rubber but not the braid underneath.

Aluminium solder

Now comes the tricky part – the braid is aluminium therefore you can't solder to it. Yes I know you can get aluminium solder but I don't have any and anyway the centre core is of stainless steel so that definitely won't solder. Therefore we have to devise a method of making a strong electrical sound connection.

The solution I came up with was to use crimped connections. I took a crimp connector socket and cut off the end leaving just the crimping part. I then laid the piezo-electric wire and the normal coaxial wire in the crimp sheath and bent the small flanges over, see Figure IV

I used a crimping tool to do this but if you are careful you can use pliers quite adequately. When crimping the braid it is a good idea to twist it slightly together to keep it in place while you work. To finish the job I enclosed the crimped ends in a small piece of epoxy putty.

This comes as a blue and white strip rather like plasticine – you knead it together until it is a uniform colour and then use it like a stiff putty. In 24 hours it will set rock hard giving a good seal preventing any mechanical strain undoing the crimp connectors.

Next we have to arrange this sensor so that it can measure the force of a punch. This I did using the arrangement shown in Figure V. The wooden cover to the sensor ensures that the force of the punch is distributed evenly along the length of the cable. What you have to do is punch the top piece of wood but not before you have remembered to put on a boxing glove.

If you are making a really good job of this you might place this arrangement on something that will give a little when hit, like a strong spring. This will make punching a little more comfortable for those who are really good at it.

Very narrow pulse

Having set up our transducer we have to make its output suitable for connecting to our computer. What we need first of all is some form of amplifier, as my initial tests showed a pulse of about half a volt when it was hit with a large reel of wire. To minimise interference I chose to use a differential amplifier to boost this up to five volts.

Now the voltage output is in the form of a very narrow pulse, and if it were left like this there would be little chance of the computer's analogue input port having time to read it. Therefore what we have to do is to take the peak voltage of the pulse and hold it long enough to take our reading.

This peak detector is formed by the diode coming from pin 8 and the capacitor across pin 5. When a pulse comes along, the capacitor is charged up to the height of the pulse and the diode prevents it being discharged when the pulse has gone. We then pass this through another amplifier acting as a voltage follower to prevent any discharge.

The output of this amplifier is passed through a diode to remove some of the standing DC voltage and into a resistor that gives a low enough impedance so as to prevent any interference to the input of the analogue-to-digital converters in the computer.

We do need to be able to discharge the peak-detecting

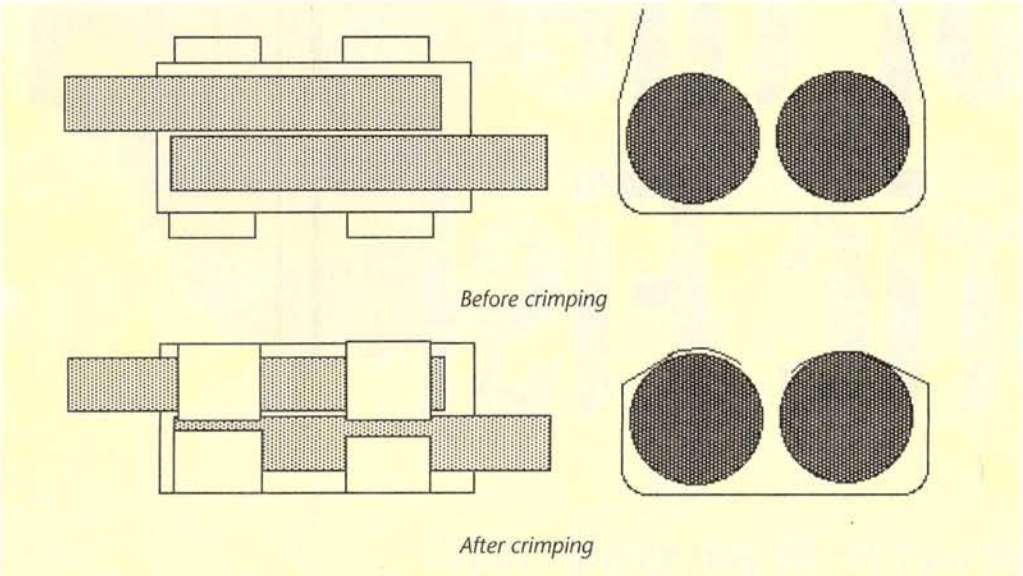


Figure IV: ...and how to crimp the connections

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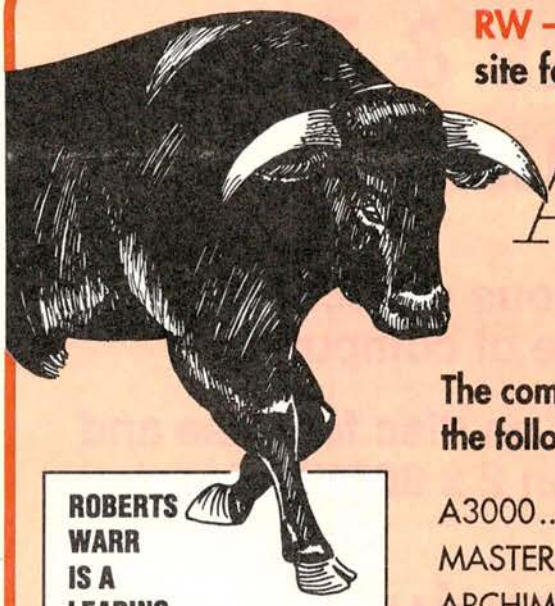

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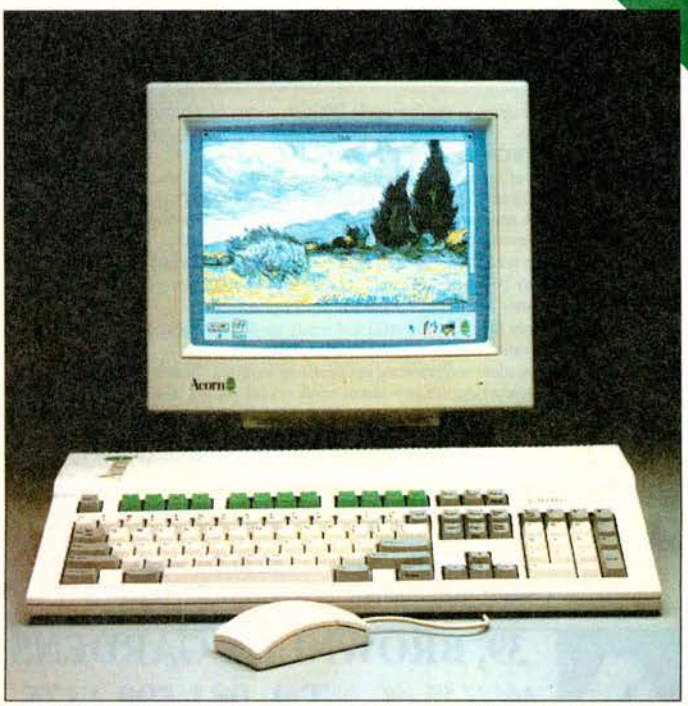

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!!! Coming soon - adapter for A3010, A3020 & A4000 !!!

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Your computer could be infected with any of the following viruses. !KILLER will detect and remove them painlessly!

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Icon	*Image*	*Increment*	*Irqfix*
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capacitor to prepare for our next punch, and this is where the transistor comes in.

This is placed across the capacitor and can short it out when the transistor is turned on. This can be from a push button to +5V or it can be derived from the computer. To make things a lot more convenient we could use the wire normally used as a fire button input as an output.

However, this will only work with the older 8-bit machines. I tried this on the 32-bit machines but the operating system would not let me write to the correct registers. Therefore I went in at machine code level to write to them.

I discovered that the interrupt system kept re-programming them back to be an input so all I could achieve was a short negative-going pulse. This was no use without extra electronics so I decided to use bit 0 from the User Port to achieve the necessary control.

The parts to make this are included in Body Build pack No. 84. This includes piezo electric cable and some epoxy putty as well as the electronic components, vero board and layout.

Driving software

The analogue input port plug and cable is included but you will also need some way to connect the circuit to the User Port. Instructions of how to do this will be included in the pack. Users of the 32-bit machines without an input/output podule can use the I²C interface I designed for the computer.

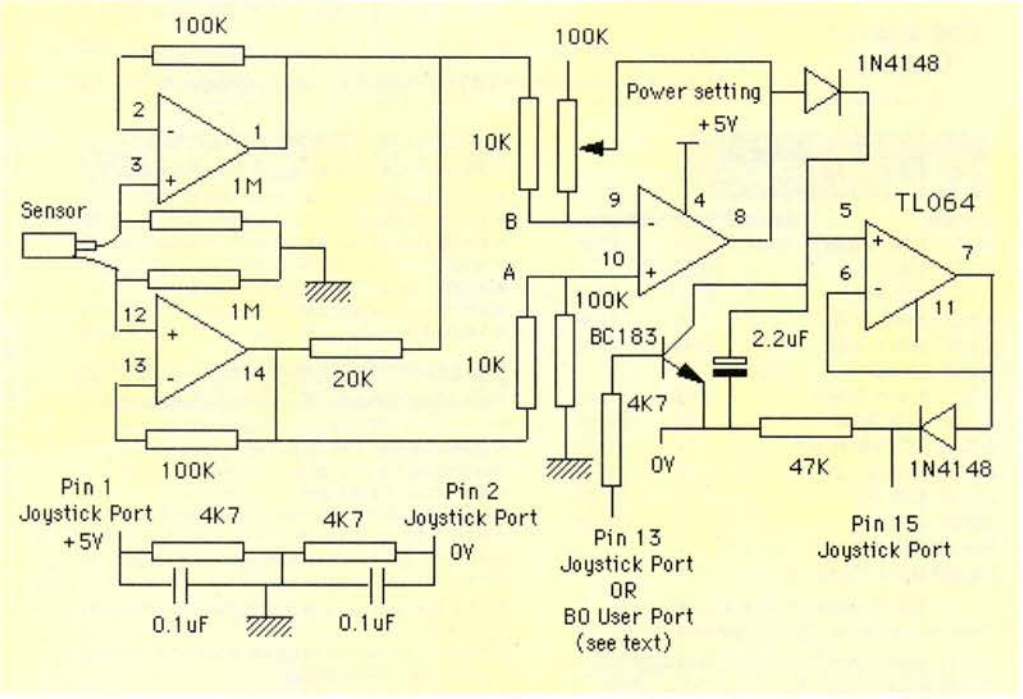
The driving software is nothing remarkable and is given on the subscription disk. It basically reads the analogue input port to establish any DC or residual reading. It then uses this as a reference and continually reads the input.

When that input is greater than the reference, plus a little for noise immunity, the program considers the punch to have occurred.

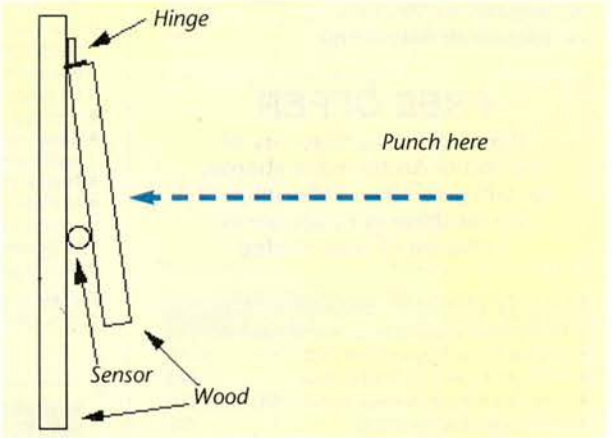
If this is the best so far it is registered at the bottom of the screen. If the punch reading is equal to 1023 this means that the maximum value has been registered and perhaps the punch was even harder. Therefore you are required to turn down the gain in the amplifier and the best punch value is reset.

You can make all sorts of variations on this theme with better and more elaborate software. For example you can have a graphical output like a fair ground *ring the bell* machine, and change the boxing glove for a hammer. Like most Body Build projects this is just the beginning.

● *That's all for now but look in next month for perhaps the best Body Build project I have ever seen – and that's a clue.*



● *The circuit of the amplifier*



● *The mechanical arrangement of the punch meter*

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Body Build Pack No. 74: I²C interface **Kit £21** **Assembled £25**
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If you need a 256 grey-scale hand scanner for your Archimedes then look no further.
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Please specify Archimedes type, not compatible with A3010, A3020, A4000.

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Supplied with 3.5" Floppy Disc Drive and a mouse, Colour Monitor and lead, TV modulator, 20Mb fast IDE Hard Disk Drive, 'Compression' utility to increase the Hard Drive capacity to typically 40Mb, the highly acclaimed Computer Concept's Impression Junior DTP package, EasiWord wordprocessor, Quest for Gold game, applications suite of software packages and comprehensive audio training tape.

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Sale Offer Price: £729

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Special Education discounts available on micros, RAM upgrades, ARM 3 Turbo Card, etc. Please write in or telephone:

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A powerful security feature has been provided with the two unique commands *IDELock and *IDEUnlock, ideal for educational establishments where hacking or tempering may be prevalent that may lead to loss of data. Once locked, the configuration can not be changed until a secret password is used. The !IDEForm Write Protect option is particularly useful in conjunction with *IDELock as it will prevent any unauthorised deletion of data.

By an innovative use of on-board memory, the card will remember its configuration, even if moved to another slot or even a different machine, this also includes the unique security features.

Hardware

- Single width EuroCard
- Supports proposed ANSI ATA (IDE) specification
- Fast 16 bit MEMC interface interrupt driven to support background disc operations
- 5 Mbytes per second peak transfer rate
- Optional on-card 20Mb or 40Mb hard disc
- Up to two drives (master and slave) per card
- Multiple cards per machine (up to four)

Software

- Conforms fully to the Acorn IDE Specification
- All software supplied in ROM
- Filing system 'IDEFS'
- Desktop filer with drive ready detection and disc name under icon
- !IDEForm, WIMP based configuration and formatting software
- Drives can be individually write protected
- Up to four drives over multiple cards
- Power saving standby modes supported with configurable timeout
- Drives can be used without translation in native mode for minimum overhead
- !IDEFSDisk, creates PC emulator hard discs

Prices

Part No.	Capacity	Access Speed	Price
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ADA 0580	330Mb	15mS	**£799**

All the above 3.5" hard drives are supplied complete with Controller Card, cable & Software on ROM. (Internal fitting). For use with A300/A400/A500 series machines.

AAA 0300 External Case & PSU for A3000 **£85**
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Internal Hard Disc Drives for A3000/A3010

State of the art, 4 layer internal IDE Hard Cards for the A3000. Software supplied in, On-board ROM.

ADA 0150	20Mb	19mS	**£149**
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Supplied ready assembled. No soldering required. Simply plug into the allotted space.

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(while stocks last)

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New RISC OS Version also available (please specify)

- For A3000 **£15** - For A5000 **£16**

For A3000 Serial Upgrade **(£19)** required

A3000 I/O Card (User, Analogue & IIC)

This NEW versatile I/O Card from Watford, fits inside the A3000 and includes an Analog to Digital Converter, a User Port, and an InterIC (IIC) connector.

The card allows many of the peripherals developed for the BBC to be used with the Archimedes A3000. The ADC and User Port have the same pin out and connectors as the BBC computers.

Extensive RISC OS software is supplied to provide BBC OSBYTE calls for support of the ADC and User Ports, including the BASIC keyword ADVAL. The software provides extended RISC OS support for separate interrupts from both the ADC and User Ports, permitting easy interrupt driven operation.

The card is provided with all the software in ROM and is automatically loaded when the machine is turned on.

Peripherals connected to the ports can obtain up to 500mA of power at +5V. A fuse is fitted to the card to protect the A3000 from damage arising from accidental short circuit of the power output.

Features

- An 8 bit User Port with a standard 20 way IDC connector, compatible with the User Port on the BBC computers and the Archimedes I/O Podule.
- A 10 bit Analog to Digital Converter with a standard 15 way D type connector, compatible with the ADC on the BBC range of computers and the Archimedes I/O podule.
- An InterIC (IIC) Port with a 5 pin DIN socket to connect the A3000 to external IIC devices. **£38**

Leasing finance at very attractive rates now available to Businesses (subject to status), Schools, Colleges, Universities, Government Depts. and Local Councils. Minimum order £1,000. Please telephone for details.

Archimedes External Disc Drive Interface

With this interface it is possible to connect almost any 5.25"/3.5" disc drive with its own power supply to the Archimedes. Upto 4 disc drives can be connected. Fully Buffered Board. NO SOLDERING is involved. Supplied complete with necessary lead.

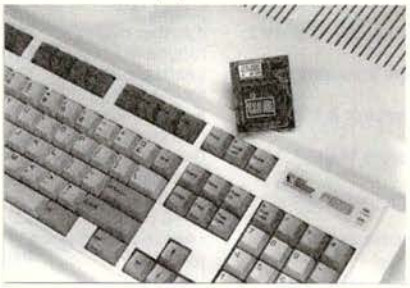
Price £21

Back Plate Extension

- A300/400 **£15;** - A3000 **£14**

ARM 3 Turbo Card MkII

Simply The Best



Here it is at last – the all new Mark 2 version of Watford's highly acclaimed ARM 3 processor board for the Archimedes and now also the A3000 series computers. Using the latest surface mount technology on a high quality four layer circuit board we have reduced the overall size to a mere 53mm x 45mm, and the cost to only £169. Mk II upgrade will increase the speed of your micro by a factor of 3 to 6.

Any competent A300 or A400/1 series micro owner can fit the upgrade himself, as we provide full fitting instructions and a special ARM chip extraction tool. However for A3000 micros and those not wishing to perform the upgrade themselves, we will collect, upgrade and return your micro by courier service, at an additional cost of £24.

(A300 and old A440 series owners please note – you will need to upgrade to MEMC1A for ARM3 to work.)

RRP £249

Special Offer £145

Acorn have satisfactorily evaluated Watford's ARM 3 upgrade and the A3000 upgrades are fitted by Acorn approved surface mount technology centre, therefore its fitment will not invalidate Acorn's warranty on the micro.

BBC MASTER

MASTER 128K Micro incl. Acorn's View, Viewsheet, ADFS, BASIC Editor & TERMINAL **£329**

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Archi Educational Software

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Clip Art Set 2	£28
Concept Designer	£23
Craftshop 1 & 2	£28
Euclid 2	£50
Graph Box	£59
Graphbox Professional	£107
HotLink Presenter	£40
Illusionist	£69
Kermit	£46
Mogul	£17
PCAD Educ.	£395
Poster	£79
Pro Artisan	£70
ProCAD	£475
Prime Art	£46
Render Bender 2	£79
Revelation 2	£80
Snippet-New	£32
Titler	£119
Tween	£29
GAMES	
Air Supremacy	£17
Apocalypse	£14
Arcade 3 Compilation	£12
Battletank	£10
Black Angel	£27
Boogie Buggy	£14
Break 147 + Supa Pool	£19
Bughunter in Space	£12
Bughunter/Moondash	£10
CADet	£135
Casino	£10
Cataclysm	£19
Caverns	£10
Chess 3D	£16
Chocks Away	£27
Compendium	£32
Chocks Away Extra	£14
Chuck Rock	£18
Conqueror	£15
Corruption	£18
Cyber Chess	£38
Ego Repton 4	£–
Elite	£33
Enter the Realm	£19
E-Type Compendium	£20
E-Type Designer	£13
Family Favourites	£13
Galactic Dan	£19
Gods	£24
Grievous Bodily Arm	£19
Holed Out Designer	£13
Holed Out Golf Comp	£20
Hostages	£14
Inter Dictor 2	£26
Iron Lord	£15
Jahangir Khan Squash	£19
Jigsaw	£27
Lemmings	£20
Oh no more Lemmings	£15
Lost Temple	POA
Lotus Turbo Challenge	£19
Mad Prof Mariarti	£17
Masterbreak	£16
Man at Arms	£14
MahJong Patience	£15
Manchester United II	£19
Mig 29	£24
Nebullus	£21
Nevryon II	£20
Omar Sharif's Bridge	£23
Pandoras Box	£18
Pipe Mania	£17
Play It Again Sam	£–
Populous	£23
Puncman 1 & 2	£16
Puncman 3 & 4	£16
Pysanki	£14
Quazer	£10
Real McCoy 2	£23
Real McCoy 3	£22
Redshift	£14
Return to Doom	£16
Repton 3	£14
Saloon Cars Deluxe	£27
Sim City	£19
Spitfire Fury	£22
Splice	£25
Sporting Triangles	£24
Superior Golf	£14
Superpool + Break 147	£22
Swiv	£19
Talisman	£12
Timewatch	£24
Trivial Pursuit	£22
Twin World	£15
U.I.M.	£23
White Magic 2	£15
Worldscape	£16
XFire	£19
Zelanites	£23
Miscellaneous	
Ancestry	£59
Arccomm 2	£38
Arcterm 7	£64
Armadeus Sound	£60
Avante Garde Fonts	£23
BBC DFS Reader	£6
Broadcaster Loader	£65
Chameleon	£34
Chatter	£34
Compression (CC)	£38
Craftshop 1	£27
Craftshop 2	£27
Equasor	£38
FlexiFile	£97
Genesis	£15
Genesis Plus	£68
Genesis 2	£99
Investigator 2	£22
Magpie 2	£42
Notate	£42
Numerator	£66
Pin Point	£65
Presenter 2	£29
Presenter Story	£145
Prophet Accounts	£132
Prophet Demo Disc	£10
Rainforest	£17
Revelation 2	£95
Rhapsody in Blue 2	£45
Score Draw	£46
Show Page	£127
Speech!	£15
The Victorian	£17
Time Tabler	£549
Toolkit (Clares)	£35
Touchtype	£40
Tracker	£39
Turbo Driver BJ10E	£42
Type Studio	£43
Vox Box	£46
WorldScape	£17
LANGUAGES	
Desktop C	£199
Macro Assembler	£40
Robo Logo	£69
BASIC Compiler	£77
Logotron Logo	£45
Risc BASIC	£120
Risc FORTH	£110
Cambridge Pascal	£95

Minerva's Archimedes Software

EasyWord	£18	Time Tabler	£549
Home Accounts	£35	System Delta	£59
System Delta Program Reference Manual			£29

Stand alone Business Accounts Packages
Sales; Purchase; Order Processing and Invoicing; Nominal; Stock management
£79 per module
or Complete Business Package **£325**

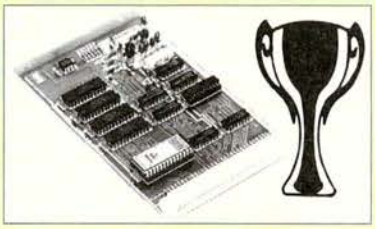
Cortian CKAI Interface

Eliminates the need to have a User port in A3000, A5000 and any other Archimedes without User Port. Fits to the Econet socket. **£29**

Concept Keyboards

- A4 Standard Pack **£95**
- A4 Primary Pack **£100**
- A4 Designer Pack **£110**
- A3 Standard Pack **£99**
- A3 Primary Pack **£105**
- A3 Designer Pack **£110**
- Universal 2010 Keyboard A3 **£115**
- Universal 2010 Keyboard A4 **£110**

Archi Real-Time Digitiser



Now supplied with NEW RISC OS Version Software

Watfords' Archimedes Video Digitiser is the most sophisticated digitiser ever designed for a micro. It provides a fast and flexible means of capturing images from a video camera or recorder for display and manipulation on the Archimedes range of Micros. Off-air televison signals may also be digitised via a video recorder or TV tuner. Please write for further details.

Price £99

A Set of Colour Filters for colour image grabbing using a video camera **£16**

Archi Graphic Tablet

Special Price £199

(Price includes Tablet, Leads, Software & Puck)
Stylus Optional Extra **£20**

Archi Graphic Tablet Junior. Working area 9" x 6". Price includes Stylus **£105**

Surge Protector Plug

Fitted in place of your normal mains plug, this device protects your equipment (and data from corruption), against mains high voltage translent spikes/surges caused by lightning or thermostats switching.

Protection for only **£8.50**

4 Way Mains Distribution Socket

4 way top quality mains trailing sockets.
Supplied wired up with mains plug ready for use.
Can be screwed to floor or wall if required.
Very useful for tidying up all the mains leads from your peripherals.

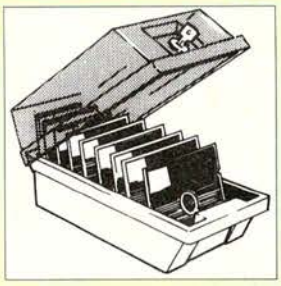
£9.50

Aries Spike Cleaner Unit

A 4 way mains distribution unit as above with a built-in Surge Arrester, providing protection for your complete Computer/Hi-Fi System

£16

Antistatic Lockable Disc Storage Units



- **M35** – holds up to 50 5.25" discs **£4.95**
- **M85** – holds up to 95 5.25" discs **£6.95**
- **M25*** – holds up to 25 3.5" discs **£4.95**
- **M50** – holds 50 3.5" discs **£6.50**
- **M100** – holds 100 3.5" discs **£6.99**
- **M10** – holds 8 of No. 10 Data Cartridges **£15**

* Not lockable

Disc Plonker Rack

When using ones micro, there is a tendency to have more than one Disc on the desk. This exposes them to the hazards of fingerprints, scratches, dust, coffee and an untidy desk. Why not protect your valuable data from all these hazards with the help of our extremely handy and low cost DISC PLONKER RACK. Holds up to eight 5.25" discs.

Protection at Only: **£2**

3M – Diskettes

Lifetime warranty on 3M Discs

- *10 x 5.25" S/S D/D 40T (744)* **£5**
- *10 x 5.25" D/S D/D 40T (745)* **£5**
- *10 x 5.25" S/S D/D 80 Track (746)* **£6**
- *10 x 5.25" D/S D/D 80 Track (747)* **£7**
- *10 x 5.25" 1.6M D/S D/D High Density for IBM XT and AT* **£8**
- *10 x 3.5" S/S D/D 40/80 Track* **£6**
- *10 x 3.5" D/S D/D 40/80 Track* **£6**
- *10 x 3.5" Double Sided High Density* **£10**

Top Quality Diskettes

Watford's life time guaranteed disc are supplied complete with self stick labels & plastic library case.

- *10 x **M3** 3.5" D/S D/D 80 Track* **£6**
- *10 x **M9** 3.5" D/S High Density* **£10**
- *10 x **M4** 5.25" S/S D/D 40 Track* **£5**
- *10 x **M5** 5.25" D/S D/D 40 Track* **£5**
- *10 x **M7** 5.25" D/S D/D 80 Track* **£6**
- *10 x **M8** 5.25" D/S H/D Hi-Density* **£9**
- ***M2** 3" Double Sided* **£2.50** *each*

Special Bulk Offer Discs

(Lifetime warranty on Discs)

BULK PACK DISCS in lots of 100

Type	S/S 40T	D/S 40T	D/S 80T
• Without Sleeves 5.25"	£25	£30	£35
• With Sleeves 5.25"	£28	£33	£38
• 3.5" D/S D/D	£21 for 50		£39 for 100
• 3.5" D/S H/D	£40 for 50		£75 for 100

3.5" Disc Drive

These top quality 3.5" Double sided, 80 track, are attractively finished in BBC beige. They are supplied complete with all cables and a Utilities Disc.

Type	Description	
	Disc Drive without PSU	
• **CLS35:**	Single Disc Drive, 400K	**£59**
• **CLD35:**	Twin Disc Drives, 800K	**£109**
	Disc Drive with PSU	
• **CS35:**	Single Disc Drive, 400K	**£82**
• **CD35:**	Twin Disc Drives, 800K	**£126**

(P.S. CS35 is supplied in a twin case with a blanking plate to enable easy expansion to a dual drive at a later stage)

Disc Drives in Monitor Stand

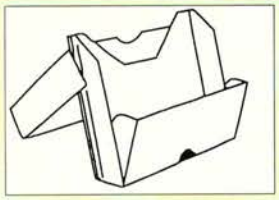
- **CDPM 800S** – Twin 5.25", 800K Double sided 40-80 track switchable disc drives mounted in an attractively finished Beige colour plinth for the BBC B & Master 128K micros. Supplied complete with integral power supply, cables and Utilities disc. The mains switch with neon On/Off light indicator, and the two 40/80 track switches are mounted on the front panel for ease of use.

£165

- **DP35 800** – Same as above except, one disc drive is a 5.25" and the other is 3.5".

£154

Plastic Library Cases



DLC1 –	Holds 5 x 3.5" Discs.	**£1.50**
DLC2 –	Holds 10 x 3.5" Discs.	**£1.90**
DLC3 –	Holds 5 x 5.25" Discs.	**£1.60**
DLC4 –	Holds 10 x 5.25" Discs.	**£2.00**

Disc Albums

Attractively finished in leather-look PVC Vinyl

DW1 –	Holds 6 x 3.5" Discs	**£2.50**
DW2 –	Holds 6 x 5.25" Discs	**£3.00**
DW3 –	Holds 20 x 5.25" Discs	**£3.50**
DW4 –	Holds 40 x 3.5" Discs or 5.25" Discs	**£4.50**

Floppy Head Cleaner Kit

The heads in floppy drives are precision made and very sensitive to dirt. The use of Cleaner Kit is a sensible precaution against losing valuable data. It is recommended to clean the drive head once a week. it is very simple to use. Available in 3.5" & 5.25", please specify.

Price £4

Acorn & Watford DFSs

- Watford sophisticated DFS ROM **£16.00**
- Watford DFS Kit complete **£49.00**
- DFS Manual (comprehensive) **£6.95**
- Acorn DNFS ROM **£17.00**
- Acorn ADFS ROM only **£25.00**
- Acorn 1772 DFS ROM Kit **£49.00**
- Acorn DFS Kit complete **£48**

Watford's MkII 1772

Single/Double Density DFS

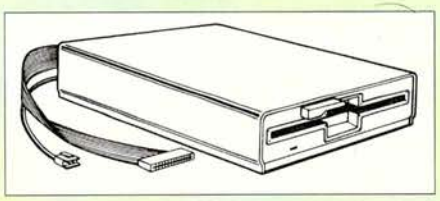
Many of our customers have wanted to use our superior DDFS and Acorn ADFS together. Now our Mk II DDFS Board with its 1772 Disc Controller, has been adapted to allow the use of Acorn ADFS as well. It also has all the commands of the Acorn's 1772 DFS, plus many more added features.

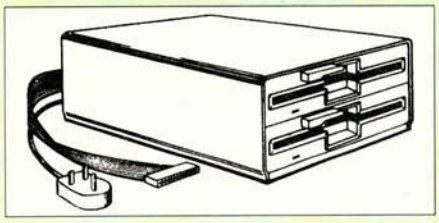
- Complete Kit Special Price **£44**
- DDFS Manual (No VAT) **£6.95**
- We will exchange your existing DFS Kit for our sophisticated DDFS for only **£26**

Quality Disc Drives from Watford

All our Disc Drives are Double Sided and will operate in both Single and Double Density modes. All 5.25" Disc Drives are 40/80 track switchable. For ease of use, the switches are front mounted. Follow the trend with a Watford plinth. (Turn to the 6th page of our advert for the Plinths).
P.S. All our 5.25" Disc Drives with PSU are compatible with the Compact Micro. All you require is our special Compact Disc Drive cables designed by us.

"Test Bureau Approved for Use in Education"





Our Disc Drives conform to BS415

Type	Description	
	Disc Drive without PSU	
• **CLS400S:**	Single, 40/80 track 400K Double sided Drive	**£70**
• **CLD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£138**
	Disc Drive with PSU	
• **CS400S:**	Single, 40/80 track, 400K Double sided Drive	**£80**
• **CD800S:**	Twin, 40/80 track, 800K Double sided Drives	**£149**

Special Cable to connect both 3.5" and 5.25" Disc Drives simultaneously to the BBC Compact £13

Continued→ → → → → → → → →

Microvitec Monitors

- **1431** – Standard Resolution Monitor #£169
- **1451** – Medium Resolution Monitor #£209
- **Cub3000** Medium Res for A3000 #£189
- Dust Cover for Microvitecs £5.50
- **Touchtec 501 Touch Screen** £239
- **Touchtec 3000** £–

Includes 3 years parts & labour warranty

Multiscan Colour

• Eizo F550i	£726	• Taxan 787	£225
• Eizo T560iT	£1319	• Taxan 787LR	£245
• Eizo T660i-T 20"	£1615	• Taxan 795PC	£415
• NEC 3FG	£345	• Taxan 875	£715
• NEC 4FG	£442	• Taxan 875+	£745
• NEC 5FG	£823	• Taxan 970	£1195
• NEC 6FG	£1485	• VIDC Enhancer	£25

Aries AlphaScan Monitor

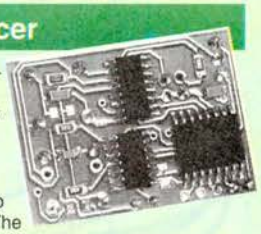
Its multiscan circuitry provides automatic adjustment for frequencies between 30 and 60KHz horizontal, and 50 and 90Hz vertical. Its 0.28mm dot pitch high resolution tube provides super sharp text graphics, while a high speed (70/72Hz) refresh rate provides a flicker-free display easing the eye strain. The VIDC Adaptor supplied with the monitor allows high resolution operation in all screen modes. £325

- Aries Alphascan 17" Plus £545

Philips Monitors

- **BM7502** 12" Hi-res Green Monitor £82
- **CM8833** 14" Med. Res Colour Monitor £185
- Dust Cover for Philips Monitors £6
- Spare Monitor Leads (various) £7

VIDC Enhancer



This unique VIDC add-on board for the Archimedes, caters for all types of Multiscan and VGA monitor and mode requirements. There are 2 versions to suit all requirements. The multimode software supplied, provides all the new modes for the selected monitor type, including the now standard Computer Concepts modes. With VGA monitor, you are no longer restricted to a few modes. A Desk Top application supplied on disc, allows new modes to be designed and existing modes to be modified for particular monitors.

Super VGA VIDC Card: Its unique design allows the horizontal and vertical sync to be buffered and have the polarity changed under software control £45

MultiVideo VIDC Card: As above but for MultiScan monitors only. £25

Integrex Ink Jet Printers

- Colour Jet 132 Printer £425
- Paper Roll £6.50
- BBC Screen Dump Software £10
- Colour Cartridge £21 • Black Cartridge £12.40
- 100 A4 OHP transparencies £55
- 8K Serial Interface Optional £123
- Colour Jet 2000 £529
- Betajet Ink Jet Printer £185
- Betajet Cut Sheet Feeder £43
- Integrex Colourjet Series 2 £335

Printer Leads

- BBC Centronics 4' £5; 6' £6
- Archi Parallel 2m £5; 5m £9 10m £13
- PC Parallel 2m £5; 5m £9; 10m £13
- 25 pin D Male/Male 2m £5; 5m £10
- Centronics Double Ended 4' £5
- Centronics Double Ended 6' £6
- RS232 Leads Various £POA

Star Printers

LC15	£190	LC200 Colour	£151
LC20	£104	SJ48 Inkjet	£169
LC100	£126	XB24-200 Colour	*£324
LC24-15	£245	XB24-250 Colour	*£389
LC24-20	£148	XB24 Colour kit	£29
LC24-100	£143	ZA200 Colour	*£260
LC24-200	£165	ZA250	*£295
LC24-200 Colour	£214	ZA250 Colour	£324

- Star/Archimedes Colour Printer Driver £15

* Includes 12 months On-site warranty

Cut Sheet Feeder

LC10/200/24-10	£49	LC15/LC24-15	£119
XB24-10	£80	XB24-15	£139
XB24-200	£99	XB24-250	£149

Serial Interfaces

8K Ser LC-200; LC24-200; FR10; FR15; XB24-10; XB24-15 £52

Buffers

32K Ram Card for LC/XB24-10; 15; LC200 £55
32K Ram Cartridge for LC24 £54

Star Printer Ribbons

LC10; LC10-II; LC15	Black £4;	Colour £6
LC-200; LC24-200	Black £5;	Colour £12
XB24-10; XB24-15	Black £5;	Colour £12

- Dust Covers for Star Printers £6

NEC Pinwriter Printers

• P20#	£165	• P72	£406
• P30	£235	• P90	£579
• P62	£342		

- P60/70 Colour Option Kit £59
- Ribbons Black for P20; P30 £6
- Ribbons for P60/70/90 Black £8 Colour £13.50

Includes 12 months on-site warranty

Cut Sheet Feeders

P20 £59; P30 £85; P60/62 £89; P70/90 £80

Panasonic Printers

KX-P1123	£126	KX-P2624	*£269
KX-P1170	£98	KX-P2123M	£144
KX-P1624	£264	KX-P2123C	£194
KX-P1654	*£330	KX-P2180M	£126
KX-P1695	£267	KX-P2180C	£143
KX-P2124	£215		

*** Price includes 12 months On-site warranty**

Cut Sheet Feeders

P36 – 1124/24i £69 **P37** – 1123/70/80 £59
P38 – P1624/95; P2624 £126

Buffers

P12 4K Buffer Board for KX-P1081 £55
P14 32K Buffer P1123/24/70/80 P1540/92/95; P1624/54/95 £16

Serial Interfaces

P13 for all above printers £46

Original Panasonic Ribbons

Guaranteed to last 3 million characters

- for P1081, 1180, 1123, 1124, 1170 £6
- for P1624, 1695, 2123/24, 2180, 2624 £8
- Colour Ribbons for KX-P1081, 1592 & 1595 Brown, Blue or Red £9 each
- **P150C** Colour for P2123/2180 £15
- Dust Covers for all 80 column Panasonic Printers £5

Citizen Printers

• 120D+	£98	• Swift 200	£178
• Swift 9	£145	• Swift 240	£200
• Swift 9X	£185	• Swift 240C	£212
• PN-48	£189	• Swift 24X	£299

- AH29804 Manual Cut Sheet Feeder for Swift 9/24/124. Holds 50 Sheets £29
- Cut Sheet Feeder for 80 col. printers £75

+ FREE 2 years Parts and Labour warranty on all Citizen Printers

- Swift 9 Colour Option £19
- Swift 24 Colour Option £29
- Swift 24 Ribbons Black £4 Colour £13
- Swift 24X Ribbons Black £8 Colour £16
- Citizen/Archimedes Colour Printer Driver £15

Laser Printers

All Laser Printers include 12 months On-site maintenance

Brother HL4-VE	4ppm	£589
Brother HL4-PS Postscript	4ppm	£970
Brother HL8-V	8ppm	£848
Brother HL-10V	10ppm	£1045
Brother HL10PS	10ppm	£1329
Brother HL10DV	10ppm	£1149
Brother HL10DPS	10ppm	£1445
Canon LBP4 LITE	4ppm	£479
Canon LBP4+ 1.5M RAM	4ppm	£639
Canon LBP-8III Plus	8ppm	£945
Canon LBP-8 plus IIIR	8ppm	£1435
Canon LBP-8 4	8ppm	£989
Epson EPL4300	6ppm	£589
Epson EPL4000	6ppm	£478
Epson EPL5200	6ppm	£575
Epson EPL7500	6ppm	£1139
Epson EPL8100	10ppm	£920
Fujitsu VM800 (Best Buy)	8ppm	£549
HP Laserjet IIP+	4ppm	£530
HP Laserjet IIID	8ppm	£1482
HP Laserjet IIIP	4ppm	£595
HP Laserjet IIISi PS	16ppm	£1993
HP Laserjet IV (600 dpi)	8ppm	£1035
HP Laserjet 4M PS	8ppm	£1425
NEC Silentwriter S62P P/script	6ppm	£994
NEC Silentwriter 266	8ppm	£669
NEC Silentwriter 290P P/script	8ppm	£1459
NEC Silentwriter S102	8ppm	£992
OKI OL400	4ppm	£440
Panasonic KX-P4410	5ppm*	£459
Panasonic KX-P4420	8ppm*	£615
Panasonic KX-P4430 Satin Print*	5ppm*	£589
Panasonic KX-P4451	11ppm*	£899
Panasonic KX-P4455 Postscript	11ppm*	£1249
Star LP-4 Postscript	–	£774
Star LP-8 III 2	8ppm	£1249
Star LP-8 III	8ppm	£899
Star LP-8 Star(post)script	8ppm	£1130
Star LS-5	5ppm	£489
Star LS-5 EX (RISC Based)	5ppm	£599
Star LS-5 TT True Type + Mac	5ppm	£799

* Now with 2 years On-site warranty

Laser Toners

Canon 2, 3 & 4	£46	Laserjet HP IIP & IIIP	£42
Epson GQ	£13	Laserjet II/D, III/D	£48
EPL4/41/4300	£55	Laserjet 4 & 4M	£75
EPL7100/7500/8100	£117	NEC SWriter	£78
		Star LP4/LP8	£42
KX-P4420/50/55	£20	Qume Crystal (3)	£85

Laser RAM Upgrades

IIP; III/P 1Mb	£49	Canon LBP4 1M	£105
IIP; III/P 2Mb	£80	Canon LBP8 2M	£125
IIP; III/P 4Mb	£132	EPL7100 256K	£39
II & IID 1Mb	£60	GQ5000 512K	£42
II & IID 2Mb	£96	KX4420/50i 1M	£75
II & IID 4Mb	£142	KX4420/50i 2M	£115
HP4 2Mb £73; 4M	£115	KX4420/50i 4M	£195
NEC S62P/S102		Star LP8 1M	£139
1Mb £99; 2Mb	£180	Star LP8 2M	£275

Laser Drum & Developer

- Epson Drum GQ5000 £93 EPL7100 £129
- Panasonic 4420 Drum £60 Developer £80
- Panasonic 4450 Drum £93

Jetpage Postscript Cartridge

- HP IIP/III £225 IID & IIID £227

Various Add-Ons

- HP Adobe costscript + Cartridge £359
- HP Premier Font Collection £28
- Laserjet various Font cartridges from £45
- Canon LBP-4 Lower Cassette Tray £75
- HPIIP/IIIP Lower Cassette Tray £96
- Laserjet 4 Powered envelope feeder £199
- LP4 500 Sheet paper cassette 3rd Bin £205

Laser Direct

P.S. We have now discontinued Laser Direct as the Hewlett Packard Laserjet 4 printer offers better facilities at a lower price. See above.

Hewlett-Packard Printers

DeskJet 500	#£265	DJ Portable	£283
DJ550 colour	#£429	DJ500 colour	#£329
Paint Jet XL	+£1185	Paint Jet	+£495
QuietJet	+£312	PaintJet XL300	+£1775

+ Includes 12 months on-site warranty
# Includes 3 years extended parts & labour warranty
- For additional £49, we will convert above 3 years warranty, to 3 years on-site maintenance warranty
- Paintjet Cartridges Black **£14;** Colour **£23**

Desk Jet 500 Accessories

- 256K RAM Cartridge **£69**
- HP Epson FX Emulation Cartridge **£45**
- DeskJet 500 Cart. Black **£14;** Colour **£23**
- High Capacity Black Ink Cartridge **£21**
- DJ500 Colour Archimedes Printer Driver **£15**
- Dust Cover **£6**
- DJ500C Printer Driver for RISC OS 2/3 **£15**
- DJ550C Printer Driver for RISC OS 2/3 **£15**
- 636G 50 x Transparencies A4 **£32**
- 636J 50 x Glossy Paper A4 (also XL) **£25**
- 630Z 50 x Cut Sheet Paper A4 **£12**

HP Paintjet/XL Accessories

- 630P 200 Z-Fold paper 8.5 x 11 **£15**
- 630Q 50 Transparencies 8.5 x 11 **£32**
- 630S 50 Transparencies A4 **£32**
- 630Y 200 Cut Sheets 8.5 x 11 **£14**
- 631Y 200 Cut Sheets A4 **£18**

Plug In Font Cartridges for DJ 500

- 22706B – Prestige, Elite, Line Draw fonts **£55**
- 22706C Letter Gothic & HP Line Draw fonts **£56**
- 22707P – Proprint Emulation Cartridge **£57**
- Desk Jet Unlimited (Book No VAT) **£19.75**

Canon Bubblejet Printers

	Printer	CSF	2nd Bin	Ink Cart
BJ10EX	£160	£43	–	£16
BJ10SX	£105	£43	–	£16
BJ200	£282	–	–	£16
BJ300*	£292	£88	£65	£12
BJ330*	£369	£110	£79	£12
BJC800C	£1329	–	–	£16

* Includes 12 months On-site warranty

- Spare Battery pack for BJ10E **£33**
- BJ10EX – Archi Turbo Driver **£42**

Special Offer:
Canon BJ10EX Printer + CC's Turbo Driver **£199**

Epson Printers

FX870	£273	LQ2550+	£673
FX1050	£343	LX100	£116
FX1170	£339	LX400	£94
LQ100	£147	LX850+	£135
LQ570	£199	LX1050	£203
LQ870	£359	Stylus 800	£244
LQ1060 Colour	£585	SQ870	£409
LQ1070	£310	SQ1170	£560
LQ1170	£434		

- Original Ribbon for LQ100 **£6**

Cut Sheet Feeders for

LQ570, LQ870 **£47**
LX400/850/LQ200/400/450/500/550 LQ1010/1070/1170 **£72**
LX1050 **£115** FX850/LQ860 **£128**
FX1050/LQ1060/SQ850 **£155**
LQ2550 **£299** SQ2550 **£210**

Tractor Feed for

LQ100 **£29;** LQ800 **£44;** LQ850/FX850 **£69;** LQ1050/FX1050 **£85;** LQ2500 **£90;** LQ2550 **£90.**

Accessories

- EX800/1000 Colour Option **£45**
- EX800/1000 Colour Ribbon **£14**
- LQ2500 Colour Option **£65**
- Multifont Card for LQ550/850/1050 **£95**

Epson Printer Interfaces

RS232 **£28** RS232 + 2K Buffer **£52**

Roland Plotters

- DXY1100 **£469**
- DXY1200 **£607**
- DXY1300 **£823**
- DXY2500 **£2345**
- Sketchmate A3 **£499**
- Sketchmate A4 **£308**
- Roland plotter Pens, Fibre tip **£7.50**

Fujitsu Printers

Special Introductory Offer

- B-100 InkJet – HP Deskjet compatible 300dpi, whisper-quiet & 6 resident fonts **#£159**
- B-200 InkJet – HP Desk Jet compatible 300dpi. Built in Cut Sheet Feeder. Optional 2nd Bin/Tractor available **#£249**
- DL-1150 Dot Matrix – 24 pin, 110 column Colour optional **£199**
- DL-1150C Dot Matrix – 24 pin, 110 column With colour option **£244**
- DL1250 **£309**
- DL3600 **£439**
- DL4600C **£799**
- DL5600C **£1049**
- DL5800 **£999**
- DL1250C **£344**

FREE 1 Year On-site maintenance.

- B-100 Cut Sheet Feeder **£59**
- B-200 2nd Bin Sheet Feeder **£89**
- B-200 Tractor Unit **£59**
- B-100/200 Ink Cartridges **£14**
- DL-1100 Colour Upgrade **£39**
- DL-1100 Black Ribbon **£5**
- DL-1100 Colour Ribbon **£11**
- VM 800 Toner Cartridge (8000 pgs) **£99**

Full range of Fujitsu Printers available at very competitive prices. Please telephone for details

Listing Paper (Perforated)

- 1,000 Sheets 9.5" x 11" Fanfold Paper **£7**
- 2,000 Sheets 9.5" x 11" Fanfold Paper **£11**
- 1,000 Sheets 9.5" x 11" NCR 2 Part Fanfold **£21**
- 1,000 Sheets 15" x 11" Fanfold Paper **£9**
- 2,000 Sheets 15" x 11" Fanfold Paper **£16**
- 1,000 Sheets true A4 Fanfold Paper 70gms **£11**
- 2,000 Sheets true A4 Fanfold Paper 70gms **£21**

(All our Fanfold paper is Micro perforated leaving a smooth clean edge when the tractor feed strips are detached).
Carriage 1K Sheets £2.50, 2K Sheets £3.00

Printer Labels

(On continuous fanfold backing sheet)

1,000 off, 90 x 36mm (Single Row) **£6.00**
1,000 off, 90 x 36mm (Twin Row) **£6.25**
1,000 off, 90 x 49mm (Twin Row) **£7.50**
1,000 off, 102 x 36mm (Twin Row) **£6.75**

Laser Printer Labels on A4 Sheets

3750 off, 70 x 29mm (3 Rows x 10) **£15.50**
2400 off, 70 x 37mm (3 Rows x 8) **£15.25**

Printer Ribbons & Various Dust Covers

Type	Ribbons	Dust Covers
BBC B/BBC Master	–	£4.00
Archimedes Micro pair	–	£9.00
Citizen 120D	£3.25	£5.00
EX800/1000	£3.50	£5.00
RX/FX80/85/800/MX80	£2.95	–
FX/MX/RX100/1000	£3.95	–
Kaga/Taxan KP810/815	£3.25	£5.00
LQ400/500/550/800/850	£3.25	£6.00
LQ1050/LQ2500	£12.00	–
LX400/800/850	£3.50	£5.00
M1009/GLP	£2.95	£3.75
NEC P2200	£4.50	£5.00
Panasonic 80 Col. Printers	–	£6.00

Dust covers for most 80 column printers available at £5 each

Professional Printer Stand

The professional printer stand takes hardly more space than your printer. Due to the positioning of the paper feed and re-fold compartments ie. one above the other, the desk space required for your printer functions is effectively halved. Its ergonomic design ensures smooth paper flow and automatic refolding.

80 Column version £24 (carr. £3)
132 Column version £29(carr. £4)

Universal Printer Sharers/Changer

Connect up to 5 Micros to 1 printer or 5 printers to 1 Micro with our combined, Sharer/Changer switch boxes.

Standard Low Cost Type

Connects	Serial	Parallel
2 to 1	£10	£10
3 to 1	£14	£15
4 to 1	£19	£20

Professional Type

Connects	Serial	Parallel
2 to 1	£15	£16
3 to 1	£20	£23
4 to 1	£30	£34

Cables extra at £5 each

Cross Over Manual Switch

2 In/2 Out Parallel	£29
2 In/2 Out Serial	£28
3 In/2 Out Serial	£36

Auto Printer Sharer

Connects	Serial	Parallel
2 to 1	£34	£36
4 to 1	£52	£53
8 to 1	–	£85

256k Multi Spooler

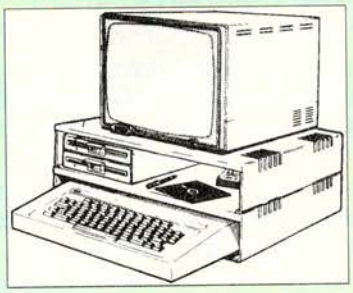
These Auto Parallel Printer Sharers have built-in 256K of Printer Buffers. They can be used as Auto Sharers, Printer Buffers or both.

- 2 In/2 out **£125**
- 4 In/2 out **£139**
- 8 In/1 out **£185**

Compact Converter Units

Serial to Parallel **£32** Parallel to Serial **£32**

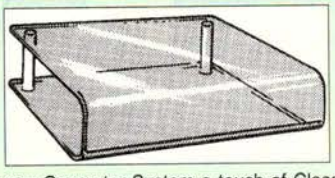
Plinths for the BBC Master and A3000



- Single Master Plinth 490 x 310 x 105mm **£14**
- Double Master Plinth 490 x 310 x 210mm **£26**
- A3000 Single Plinth (very sturdy & precision made), has a slot on the left for the switch & cut out on the right for 3.5" Disc Drive **£15**

VISA
AMERICAN EXPRESS
CREDIT CARD 24 HOUR
Ansaphone Hot Lines
(0923) 250234 or 233383

Perspex Printer Stand



Give your Computer System a touch of Class with our elegant, smoke finished Perspex Printer stand.

80 Column version **£16** (carr £3)
136 Column version **£20** (carr £4)

Continued→ → → → → → → → →

QUEST MOUSE Mk III

- Quest Mouse III & Quest Paint £49
- Quest Mouse III, Quest Paint, AMX Stop Press & Pagefont £69
- Quest Mouse III only £25
- Quest Paint Software only £28
- Quest Font Disc (22 Text Fonts) £15
- Quest Mouse Mat (Red or Blue or Green please specify) £3
- Conquest (Quest Paint Extension) ROM £24
- Quest Colour Dump Disc – This new software allows you to print direct from Quest Paint to your Integrex Colour Printer £18
  (P.S. Quest Paint is not compatible with BBC Compact)

Quest Paint is the winner of the BBC Acorn User 1990 Award for the Best Art/Graphics software

Mouse Cleaning Kit

To obtain trouble free operation and prolong the life of your mouse, the high tech rodent requires regular cleaning. Our deluxe mouse cleaning kit is ideal for the purpose £3

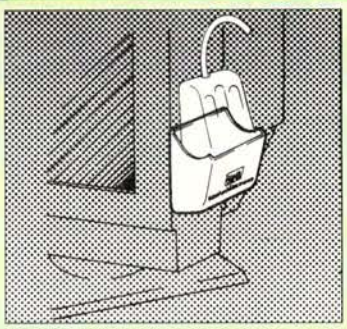
Archi Mouse Port Splitter

Our handy little splitter unit eliminates the risk of damaging your micro due to constant plugging and unplugging of the mouse by allowing you to connect both, a joystick and a mouse simultaneously to your Archimedes. £15

Mk III AMX MOUSE

- **AMX Mouse plus Super Art £49**
  (Please specify for BBC, Master or Compact)
- AMX MOUSE ONLY £25
- AMX SUPERART Package £26
- AMX STOP PRESS – A Desktop publishing software. Works with Keyboard, Joystick or a mouse £25
- PAGE-FONTS – Over 20 Fonts for use with AMX Pagemaker £13
- AMX DESIGN (ROM) £29
- AMX EXTRA EXTRA £16
- MOUSE MAT £3

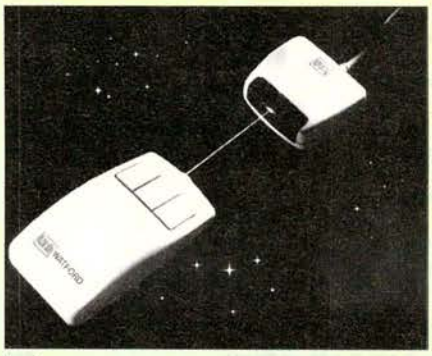
WE Mouse House



Treat your mouse to a cosy Mouse House. This handy little gadget solves the problem of where to store your mouse when it is having a rest. Made of sturdy plastic, the WE Mouse House attaches to the side of your computer, monitor, disc drive etc.

Only £3

Archi Cordless Mouse



Features

- Infra Red Signal Transmission
- High Resolution 200 DPI
- High Tracking Speed of 600mm/s up
- Anti-static Silicon Rubber Coated Ball
- Low Friction Teflon Footpads
- Power - by two AAA size batteries (not included)
- Automatic Standby Mode after 5 seconds inactive
- Auto Power Shut-Down after 20 seconds inactive

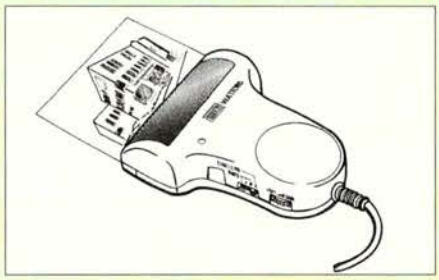
Price £32

Quest – Tracer ball

An attractively finished, extremely reliable, mouse replacement, input device. Requires very little desk space. Connects directly to your BBC B, BBC Master or Archimedes Micro.

QT-10 BBC/Master Version £25
QT-20 Archimedes Version £26

Beeb Hand Scanner



Watford Beeb HandScan is a compact unit which will allow photographs, diagrams, or any other documents to be digitised quickly and easily, to then be used in a desk top publishing package, art program, or even in your own Basic programs!

Beeb HandScan & Firmware £99

Archi Mk II Hand Scanner

Watford's Mk II hand scanner has a maximum resolution of 400 dpi. The scanning width is 4". The sophisticated software is supplied in a 64K ROM, located on a standard single width expansion podule. As you scan a page, the image appears in the scanning window on the screen, scrolling up in real time. Other facilities include Cropping and scaling to any size including stretching and squashing in X and Y directions separately. Colour tinting. X and Y flip. Edge detection which turns solid objects into outlines.
Images can be printed on any printer supported by RISC OS.
On-screen help is provided via the RiscOS interactive help facility. (Please write in for full technical details).

AHS-4 Archi 300/400 Version £109
AHS-3 Archi A3000 Version £119

Winner of the BBC Acorn User 1990 Award for the Best DTP/Word Processor

The Wapping Editor

The Wapping Editor from Watford Electronics represents a breakthrough in Desktop Publishing for the Beeb. The package includes a 64K ROM containing ALL the software needed to get into print fast; a very sophisticated graphics module, professional quality typesetting software, a word processor, a comprehensive font editor for designing your own typefaces, and a variety of printer dumps. This mouse-driven system is designed for the BBC B, the B+ and Master computers and will take full advantage of any Sideways and Shadow RAM that may be fitted. It will run under DFS, ADFS and Network filing systems and requires as a minimum just a single 40 track drive.

Wapping Editor Software Pack £49
Wapping Editor plus Mouse £69

(Wapping Editor only works with Master Compact if a Mertec Expansion box is fitted)

Wapping Art Disc

Over 250K of clip art to cut and paste into your Wapping Editor pages. Pictures include maps, transport, people, media, sport, games etc.
Two 'ratio' screens for use with hi-res and rotated A5 pages to ensure images are not distorted when printed out. £15

Wapping Font Disc 1

Sixteen additional fonts, including smaller version of Oberon and Daisy and two new sizes of the standard font for the Wapping editor.
Also included are two Mode 0 screens containing giant 'headline' fonts to cut and paste to create extra smooth headlines.
Supplied complete with instructions. £12

Wapping Font Disc 2

This new addition to our Wapping range of DTP software provides you with additional 23 fonts for the Wapping Editor DTP pack. (80 track discs only). £13

Archi A4 Scanner

The 216mm scanning width can cope with both desktop scanning of single sheets, photographs, diagrams, etc., with its fast ten page automatic document feeder, but it can also detach from the feeder to become a convenient hand-held full page scanner for larger documents or pictures.
Scanned image control can be freely adjusted in increments of 10 dots per inch from 100 up to 400 dpi resolution with 64 levels of grey scaling. A built in shading controller and manual brightness control achieve optimum image clarity.
Unlike some scanners, which use a red light source, the Watford scanner uses a yellow/green source which vastly improves the light/dark contrast, thus eliminating the effect where any red-based colours are faded down to white and so do not show up in the scanned image.

Archi A4 Scanner £269
Sheet Feeder for above £75
Scanner + Sheet Feeder £359

Z88 Portable Micro

- Z88 Portable Micro £169
- 32K RAM Pack or 32K EPROM Pack £16
- 128K RAM Pack or 128K EPROM Pack £32
- 512K RAM Pack £86
- 256K Eprom Pack £55
- Z88 Eprom Eraser Unit £38
- Z88 Carrying Case £8
- AA Nicad Rechargeable Battery £1.50
- Battery Charger Compact & Fast £6
- Z88 Serial Printer Cable £8
- Z88 Parallel Printer Cable £18
- Z88 to Archi Link £15
- Z88 to BBC Link £8
- Z BASE £56
- Z88 to PC Link II £27
- Z88 to Macintosh £32
- Z88 Mains Adaptor £9
- Z88 Modem £114

Psion Series III

Psion, pioneer of the handheld computer, have once again redefined the state-of-the-art with the Series III. Although only pocket sized, this powerful programmable computer has many features found in desk top machines, plus powerful built-in software. They include a full specification wordprocessor and an outliner that is compatible with Microsoft Word, an extensive database, intelligent time and personal management and a powerful multifunction calculator. And with an interchangeable memory of up to 4Mb, you'll never be short of data storage space.

Psion Series III Computer
- Series 3 128K £139
- Series 3 256K £179

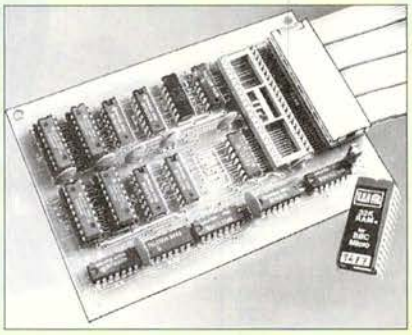
RAM Solid State Discs (SSD)
- 128K £68
- 512K £170
- 1Mb £255

Flash Solid State Disc (SSD)
- 128K £34
- 256K £59
- 512K £102
- 1Mb £170
- 2Mb £255

Communications
- Parallel Interface Link £25
- RS 232 Serial Link for PC £58; Mac £59

Various
- Mains Adaptor 9V AC £12
- Spreadsheet £59
- Professional Finance £42
- Spelling Checker/Thesaurus £42

32K Shadow RAM/Printer Buffer Card Expansion Board



A MUST FOR WORD PROCESSING

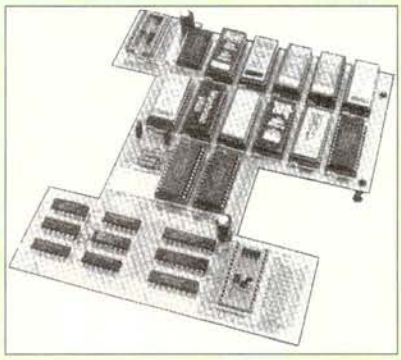
Simply plug the ribbon cable plug into the 6502 socket and gain a massive 32K of extra RAM.

- "VIEW" Wordprocessor users can now type in letters in 80 columns and have up to 28K bytes free – 5 times as much as normal.

- In WORDWISE (or WORDWISE-PLUS), preview in 80 columns with the full 24k of text in memory. This product is recommended as an ideal complement by Computer Concepts.

Only £49

Solderless Sideways ROM Socket Board



- Increases your BBC Micro's ROM capacity from 4 to 16.
- **No soldering required.**
- Socket 14 takes two 6264 RAM chips.
- Read protect to make RAM "Vanish" allows recovery from ROM crashes.
- Battery backup option for RAM chips.
- Supplied ready to fit with comprehensive instructions.

Price: Only £32

Battery Backup fitted **£35**

Battery Backup only **£3**

16K Sideways RAM **£8**

- Sideways RAM Utilities Disc for Solderless ROM Board. Includes the options to load and save ROM Images and the facility to use Sideways RAM as Printer Buffer.

Only: £8

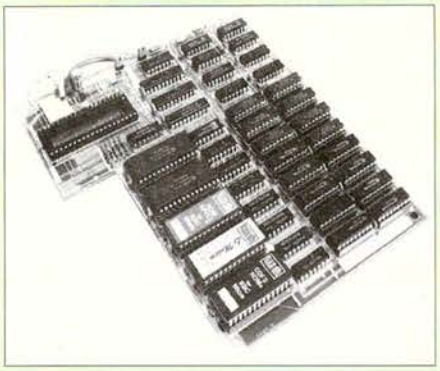
Watford DATA DUCK

Convert two single Disc Drives into one Dual Drive with this simple external unit (Suitable for Disc Drives with PSU. For Disc Drives without PSU, you will also require Watford Power Duck, see below).

£14

Watford POWER DUCK £8

ROM/RAM Card



- No Soldering required to fit the board.
- Compatible with BBC B
- Total number of ROMs increased from 4 to 8.
- Up to 8 banks of sideways RAM (dynamic).

PRICES:
- ROM/RAM card with 32k DRAM £39
- ROM/RAM card with 64k DRAM £52
- ROM/RAM card with 128k DRAM £83

OPTIONAL EXTRAS:
- 16k plug-in Static RAM kit £8
- 16k DRAM for Upgrade £13
- Battery backup £3
- Read and Write protect switches £2 each

Complete ROM-RAM card with all options fitted £99

ROM Cartridges for the BBC Master

Will accept the larger Piggy Back ROMs like Interword, Quest, etc.

- Twin £9; • Quad £14

Disc Drive Power Leads

Supply from BBC power supply to standard Disc Drive Connection: Single **£3.00**; Dual **£3.75**

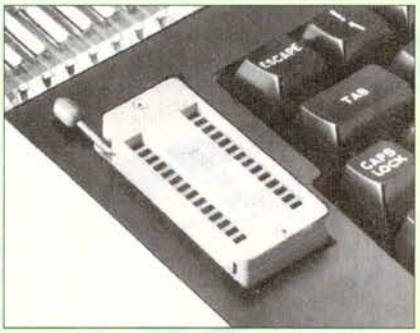
Disc Drive Interface Leads

BBC to Disc Drives Ribbon Cable
Single **£4** Twin **£6**

Miscellaneous Connectors

	Plugs	Sockets
RGB (6 PIN DIN)	50p	75p
RS423 (5 pin Domino)	70p	80p
Cassette (7 pin DIN)	40p	95p
ECONET (5 pin DIN)	35p	50p
Paddles (15 pin 'D')	150p	250p
Disc Drive Plug 4 way	100p	–
6 way Power Connector	120p	150p

Sideways ROM ZIF Socket System



Allows you to change your ROMs quickly and efficiently, without having to open the lid. The ZIF socket is located into the ROM Cartridge's position. It is very simple to install. No soldering required. Also included in the price is a plastic see through storage case with antistatic lining, which allows you to store 12 ROMs.

£18

Computer Concept's ROMS

Inter BASE	£49
Inter CHART	£25
Inter SHEET	£37
Inter WORD	£36
Mega-3 ROM	£76
Spell Master	£42

Wordwise plus

£38

FREE, the superb Word-Aid ROM worth £24, with every Wordwise Plus.

Word-Aid

This advance utilities ROM extends the power of your Wordwise plus ROM.

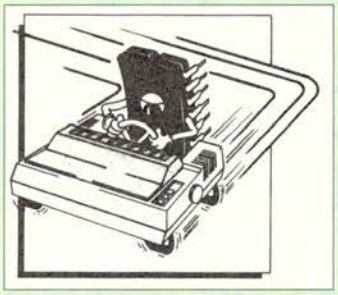
Only **£24**

(N.B. Word Aid requires a Disc interface in your Micro)

Acorn ROMS

View 3.0 ROM	£45
Viewsheet (Acornsoft)	£36
Viewstore	£36
Viewspell – 80T disc	£25
View-Index	£12

View Printer Driver ROM



View is a powerful word processor, but it seriously lacks in terms of printer driver support. With the View Printer Driver ROM, the View users will find themselves in the realms of advanced word processing.

Price: Only £29

Mini Office 2 – Disc

for BBC B & B+ **£12**

(When ordering please specify for which Micro & 40 or 80T Disc)

User Port Splitter Unit

Gone are the days when you had to plug and unplug devices from the User Port. This extremely useful little device allows you to connect two devices simultaneously to the BBC's user port.

Excellent Value at **£22**

Assorted ROMS

ACORN ADFS	£25
ACORN BASIC 2 plus User Guide	£22
ACORN DNFS	£17
Acorn OS B+	£25
Acorn OS 1.2	£14
Beebmon	£22
Dump Out 3	£25
Graphics Extension Rom	
GXR-B	£21
GXR-B+	£22
Logotron LOGO	£43
MASTER OS ROM	£38
Master ULA (47)	£15
Master ULA (60)	£10
Numerator – Archi	£69
Numerator – BBC	£39
Pendown ROM	£32
Rom Manager	£20
SERIAL ULA	£13
TED	£35
Video ULA	£14
1Mb OS ROM	£39

Watford Electronics' New High Tech Computer Boutique is now open in Luton. Don't miss your chance to visit the Acorn Village.

CHIP SHOP

1 MB-10 DIL D-RAM	£4.50
1 MB ZIF D-RAM	£4.00
256K x 4-8 DIP	£4.75
256K x 4-8 ZIF	£4.00

Memory SIMs

• 256K x 9-7	£9	• 1Mb x 9-7	£29
• 256K x 9-8	£9	• 1Mb x 9-8	£33

Various Chips

DS3691	£4.50		
DS88LS120	£5.25		
LM324	£0.45		
SN76489	£5.50		
SAA5050	£8.75		
UPD7002	£6.00		
2764-250nS	£3.00		
27128A-250n (12V5)	£2.50		
27128-250nS (21V)	£4.00		
27256-2	£3.00		
27512-2	£4.50		
27C101G (1 Meg)	£7.00		
• 4013	75p	• 68B50	£2.95
• 4020	£1.00	• 7438	50p
• 4164-10	£1.55	• 74LS00	50p
• 4464-10	£3.50	• 74LS04	50p
• 4816 RAM	£2.00	• 74LS10	50p
• 41256-8	£2.00	• 74LS123	£1.00
• 41256-10	£1.50	• 74LS163	£1.00
• 6264LP-8K	£4.00	• 74LS244	£1.00
• 6502A	£5.00	• 74LS245	£1.00
• 65C02 3M	£9.75	• 74ALS245	£2.75
• 65C12	£9.00	• 74LS373	£1.00
• 6512A	£10.00	• 74LS393	£1.00
• 6522	£4.00	• 75453	£1.00
• 6522A	£5.00	• 75159	£3.00
• 62256ALS	£10	• 8271	£32
• 62256P-12	£8.50	• 9637	£2.00
• 6818	£4.00	• ICL7673PA	£3.00
• 6845SP	£6.00		

Acorn Speech Synthesizer package complete, for the BBC B Microcomputer

Special Offer £14

Commander Joystick

Features:

- Direct connection to BBC Analogue input port – interface needed.
- Fully compatible with all BBC Joystick controlled games programmes.
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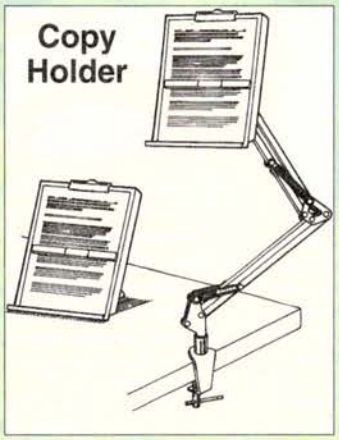

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This manual has been written to reveal the secrets of the mouse. It explains all the principles required by the hardware and associated software, and also example listings for inclusion into custom programs. The manual first details the basic principles of the mouse and a simple program which uses these principles. This information should be adequate for most applications. However, it is possible to improve the performance of the mouse by expanding on the principles already used in the software. This is again fully explained and an example program given.

It is possible to gain a full understanding of the mouse from this manual. For those not interested in exactly how the mouse functions, complete example programs are also included.

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The Epson RX/FX Printer Commands Revealed Handbook

So you bought yourself a new printer, because the salesman in the shop showed you how clever it is and impressed you with all sorts of printouts to show its capabilities – he may even have offered you a special price.

However, now that you have got it home and connected it to your BBC microcomputer, you are wondering how to make it perform these magical tasks. The manual seems to give no clues, and when you type in the example programs, the computer throws the LPRINT statements back in your face.

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The short list

QuickSound: As clear as a bell

QUICKSOUND converts, transfers and manipulates sampled sounds. With it you can import samples from a variety of sources, add effects (like reversing and echo) and then export them in a number of different formats. This includes Log to Lin or Lin to Log conversion.

Basically, QuickSound can read in samples in Armadeus, Tracker, Sound Synth or raw data format.

PRODUCT SPOTLIGHT

Price: £10
Supplier: Desktop Projects Ltd., Unit 2A, Heapriding Business Park, Ford Street, Stockport SK3 0BT
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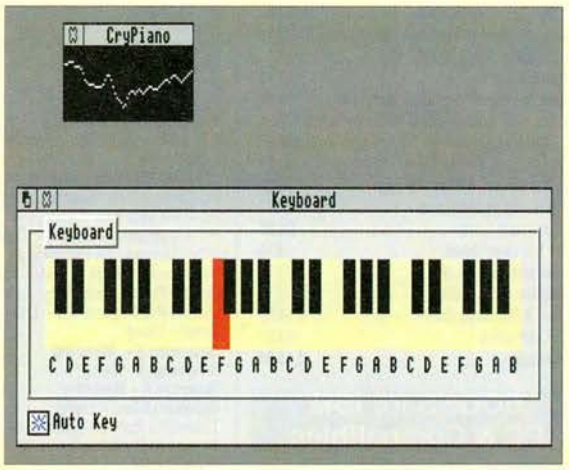
It can save samples in all the above formats except Sound Synth, but adds Module format – for use by programs like !Rhapsody – and Utility which is a self-contained sample file with the playback routines included that plays itself immediately on loading then deletes itself from memory .

Loading a sample usually involves dragging a file to the QuickSound icon. When a sample is loaded a little window appears that shows its waveform and clicking Select in this window plays the sample.

Clicking Menu gives you a number of other options. You can reverse a sample, add echoes of various lengths, or vary the sample and the replay rates. You can also play from a screen keyboard – the piano variety – with different pitches achieved, speeding or slowing the replay rate. Multiple effects can decrease the volume of a sample, as well as its length.

If your sample is a single note the screen keyboard lets you play scales. If it's a tune or a piece of speech the results can be ... odd. The effect is not perfect: I found that a piano note, played from the keyboard, became distinctly flat at the treble end.

Using the program is pretty straightforward. It's quite effective but it does have its limitations. Those who want to do really professional sound manipulation will doubtless want more, but for the less ambitious this has possibilities.



BestForm: Breaking the formula code

ONE of the things that most word-processors and DTP packages don't do well is mathematical and scientific formulae – with the main exception being TechWriter.

Formulae have their own peculiarities of layout and they tend to need a lot of special symbols that can appear in improbable places and at all kinds of sizes.

BestForm is one solution to this problem. It is a utility specifically for generating and modifying mathematical formulae. It has a flexible set of features that can let you produce very complex results which can then be printed or saved as a Draw file to be used by other programs.

PRODUCT SPOTLIGHT

Price: £49
Supplier: Klein Computers, Hasslocherstr 73, D-6090, Ruesselsheim, Germany.
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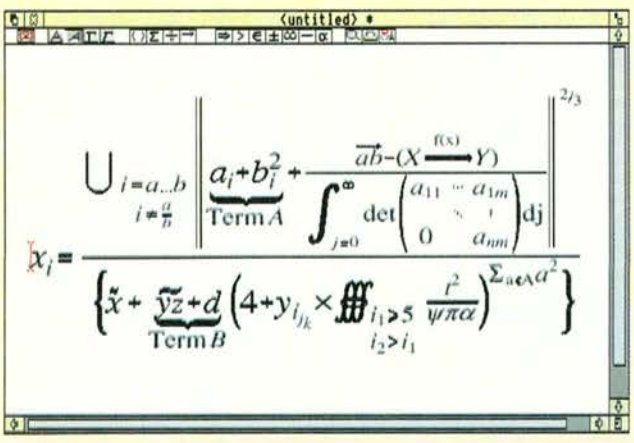
It can be used in 1Mb of ram but works better with 2Mb or more. You create and modify each formula within a window and most of the program's functions can be accessed through its toolbar – a collection of icons at the top of the window.

It is worth reading through the manual and trying out a few simple formulae before embarking on anything very ambitious. The program has a number of idiosyncrasies in how the caret moves and what parts of a formula can be selected at a time. These arise out of the way the program looks at a formula as a collection of elements, each of which can contain a subformula.

Once you get used to how the program works, most of its features are fairly easy to use. The toolbar gives you most of the commands, as well as menus of symbols, operators, Greek letters and so forth. And facilities will let you add captions, equation numbers and so forth.

Bestform aims to be a flexible solution to a complex problem. Its facilities are fairly comprehensive and should be enough for most requirements.



Geoff Brown takes a look at some unusual and useful programs

Functionplotter: From lines to surfaces

FUNCTIONPLOTTER is a utility program for plotting mathematical functions. Basically it gives you a two- or three-dimensional graph of the function which can then either be printed or saved as a draw file.

The program runs from the desktop and operates through a few straightforward menus and dialogue boxes. To use it properly you'll need to have a working knowledge of mathematical functions. Not that the program itself is difficult to use, however it is expected that you know the principles of the maths it represents.

The program can plot equations using logs, exponents and a wide range of trigonometric functions (sin, cos, sinh, coth, arccosec and so forth), as well as up to five constants.

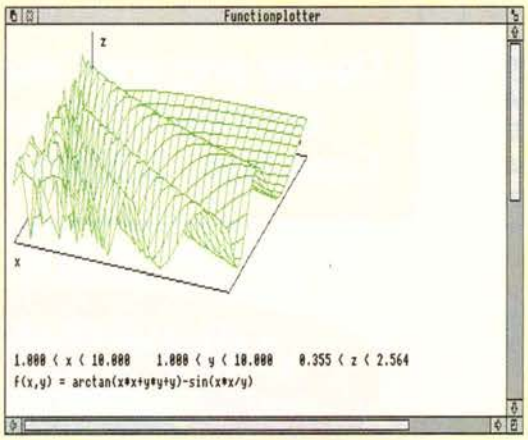
An equation with a single variable, for example:

```
y=sin(a*x)
```

produces a 2D graph while one with two variables:

```
z=sin(sqr(x*x+y*y))/sqr(x*x+y*y))
```

produces an image of a 3D surface. A 3D graph is certainly the nicest to look at as a complex equation can produce the effect of a rocky and mountainous landscape.



Beyond the basic graphs, Functionplotter can also perform a number of operations based on your equation. For 2D functions it can calculate such things as curvature, evolute and integral, while for 3D functions it can also calculate df/dx and df/dy as well as the surface area and volume of the graph surface.

While I confess that my own maths is a little rusty, I found the visual presentation of functions quite effective. The 3D graphs are a nice means of presentation and with them it is possible to see directly how a little change to a complex equation alters the spread of the results.

Overall this is a flexible program that can give a useful visual presentation of complex functions.

PRODUCT SPOTLIGHT

Price: £20
Supplier: Klein Computers, Hasslocherstr 73, D-6090, Ruesselsheim, Germany.
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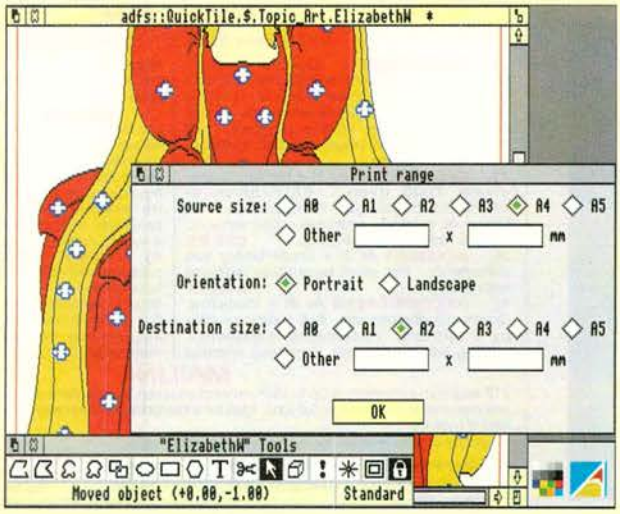
QuickTile: As big as you want it

MOST computer printers can use paper up to A4 size or thereabouts. Sometimes, however, you may want to print out something that's a bit bigger, say a poster or a large notice. To do this on your own printer you need to split the output up into sections of a size that the printer can handle.

QuickTile is a utility that can scale up a page of output and then have it printed as several separate pages or tiles. It sits between normal applications – Draw, Paint, ArtWorks, Impression or whatever – and the Risc OS printer drivers, and it can convert any printout from any standard application into a set of tiles.

it loads to the icon bar in the usual way. Once it is operating any printout that you send to the Risc OS printer drivers – including printing to PostScript files – will be tiled. The program can display a window for you to set both the original size of the output (say A4) and the intended size (say A2), plus the orientation (portrait or landscape).



Either the original or the final can be any standard paper size from A5 to A0, or you can enter the dimensions yourself.

All tiles include crop marks so that you can trim them to fit. For the final result you can tape the tiles together or mount them on to a backing sheet.

The results you get depend on the printer you use. The better its resolution the better the result. Of course, the fact that the printing is tiled will always be apparent.

If you are likely to want your pictures and text printing at a large scale this is a very handy utility.

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Risc OS 3.10 — the ultimate upgrade?

At the start of a brand new series Geoff Gallacher assesses the pros and cons of Acorn's latest operating system

So, Acorn have released the upgrade we have all been waiting for – Risc OS 3.10. In this series I am going to explore the advantages, disadvantages, bonuses and pitfalls of upgrading to the new operating system. I will cover the new features, installations, teething problems and Risc OS 2 compatibility.

The first thing that you need to decide when moving up to Risc OS 3.10 is which upgrade package you need. Acorn have provided two main options – the A5000 option (ALA34) and the A3000/A300/400 option (ALA31) with the price changing respectively to reflect the addition of the new Risc OS 3 manuals.

The A5000 option is just the roms, Apps disks and some installation instructions/notes and will upgrade 3.00 to 3.10. No manuals are supplied as the 3.00 manuals with the A5000 are adequate in most areas.

The other option is for A3000/A300/400 series machines and this includes the roms, Apps disks, manuals and fitting instructions/notes. It is slightly more expensive due to the cost of the new manuals.

If you have an old series 400 machine or a 300 series Archimedes you will require a rom adaptor board. If your 410/420/440 has a */1* after it, the rom adaptor board is not required.

Quite a number of third-party hardware houses are bringing out their own version of the board, packaging it with the ALA31 option. This should give you the same configuration as buying the Acorn A300/400 rom adaptor board at a slightly lower cost.

But bear in mind, it might not be supported by Acorn if a new operating system is released in a different size or configuration of roms at some later date.

The reason that 300 and old 400 series owners need a printed circuit board is that the rom Acorn chose for the new machines had not been invented when they were designed, so the pins in the rom sockets are incompatible.

The PCB supplied with the kit makes the sockets compatible with the 3.10 roms and should be fitted by your local Acorn service centre as it needs some careful soldering to the main motherboard. On the A300 series 1 machines a track must also be cut, so it is best left to professionals.

DIY upgrading

All the options use the same rom chips with identical code in them and if you are on a tight budget you could just buy the A5000 upgrade and fit this to your A3000. But remember that the Apps Disk supplied with the A5000 option is 1.6 Mb and you will need to copy this on to two 800k floppies before you can install it on your A3000/A300/A400 hardware, as the drive in these machines will only read 800k.

The easiest way to do this is to find a friend with an A5000, A3010, A3020 or an A4 which has 1.6Mb drives and copy the software on to your 800k floppies. You would, of course not have the manuals, but you should be able to buy these later, or borrow them from a friend.

Some third parties will be selling rom adaptor boards allowing you to fit the A5000 kit into your A300/A400 old series machine. However, as there are significant changes in the way Risc OS 2.00 and Risc OS 3.10 can be used, I would suggest that you buy an option which has a complete set of new manuals.

For those of you who remember Arthur – sometimes known as *Tim's Operating System* – the changes from 2.00 to 3.10 are not as great. However, they are substantial and

● *Welcome to the upgrade*

● *The new look iconbar showing the Apps folder and the new Task Manager icons*

the manuals are a great help, even to the experienced Risc OS 2.00 user.

If you don't want to lose your machine to a dealer – though the upgrade should take less than an hour – you could upgrade it yourself. It is important to note that Acorn have made a small, but crucial, error in the documentation regarding the installation of roms and that some of the instructions have the diagrams for the roms upside down.

A rom should always be inserted with the *notch* in the same direction as that on the one removed. This is **VITALLY** important as damage to the computer or the roms can occur if they are inserted incorrectly. Having installed the roms you need to alter the jumpers on the main board and on the rom adaptor board if it is present.

The instructions are clear and concise and once installed and configured you **MUST** do a DELete Power-On to the see if the system boots up correctly.

Look over the instructions carefully, study the inside of your machine and only proceed with the upgrade if you are confident that you know what you are doing and understand everything in the instructions. If you have any doubts at all, seek professional advise.

Obviously, it would be unwise to carry out any upgrade work while the machine is under warranty as fitting anything to your machine can invalidate it.

Keep your old set of roms in a safe place in case you ever have to put them back in the machine.

If you decide to take your machine to an Acorn dealer there are a couple of things which I would like to suggest you do to ensure a safe upgrade.

Firstly, if you have a hard disk make a backup of all your software on floppies, just in case something untoward happens during transit and also because all the new Apps will replace your existing Apps applications. A copy of the software is useful in case you might want to revert to Risc OS 2.00 or 3.00.

The service centre will probably install the new 3.10 Apps, !System and !Scrap file on to your hard disk and this might write over your existing files so it is best to have a copy safe at home. It is even better if you were to clear down your hard drive completely and then re-install all the software when you get the machine back.

This allows you to do some *housekeeping* of your data and make sure that remnants of Risc OS 2.00 or 3.00 are not left waiting to cause trouble.

The second thing is to label every single item with your name, address, telephone number and what is to be done to the machine. If you provide a list of the items which you take to the dealer, along with the serial numbers – where applicable – and give them a copy you are not likely to go home with someone else's keyboard by mistake. Remember to ask for your old roms back when you collect your machine.

● *Shutting down is very reminiscent of the Apple Mac*

Programmers' Reference Manual

The 3.10 version of the programmers' reference manual is better presented than the Risc OS 2.00 version with a lot more detail and explanation. This is one area where Acorn have let the market down, as very few of the software companies had seen the 3.10 manual before the operating system was released to the general public.

> Most software houses have had a chance to test their software on the new operating system

Software compatibility

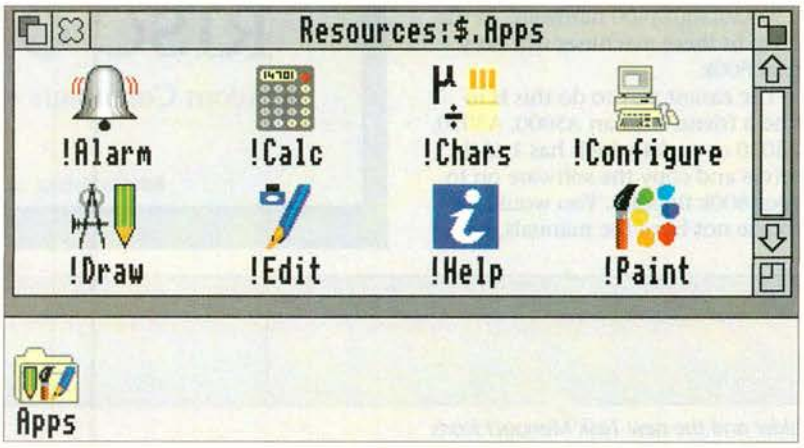
Most of the software houses have had a chance to test their software on the new operating system and most of the software written for Risc OS 2.00 seems to work – or the company have a *patch* – usually supplied free of charge – to fix any problems.

A patch is usually a small bit of code which attacks the problem area and either attaches itself to the code or alters small bits of it to make it function correctly on the Risc OS 3.10.

Though this is true for most of the software available, some companies have opted for releasing a new versions of their programs. The by-word here is ask before you buy. If the company can't tell you – don't buy it!

The biggest area of incompatibility seems to be in public domain software and in quite a few of the older games which try and squeeze every last byte of ram from the machine. As these programs have *un-official* ways of creating extra free ram in the machine causing 3.10 to function strangely or crash.

● *Next month we'll look at what Risc OS 3 can do for you.*



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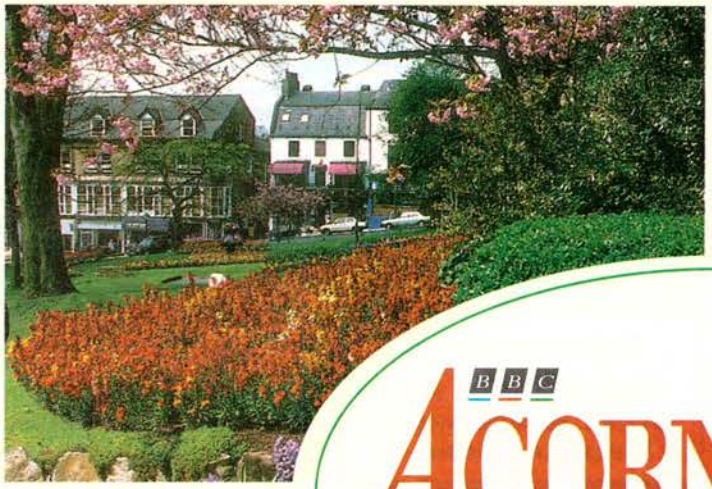

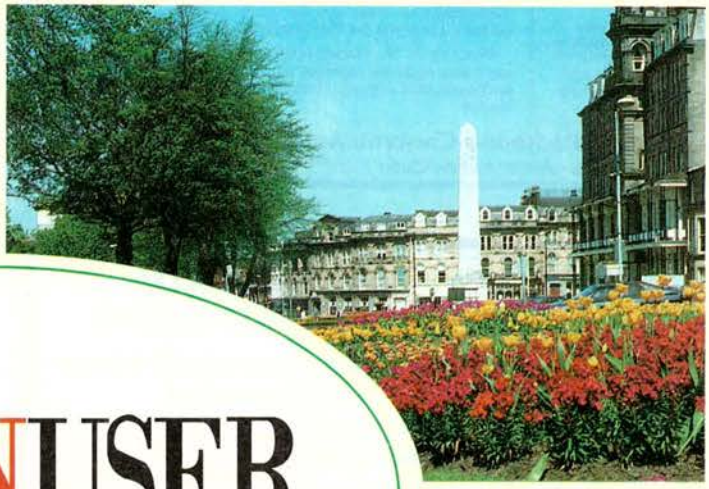

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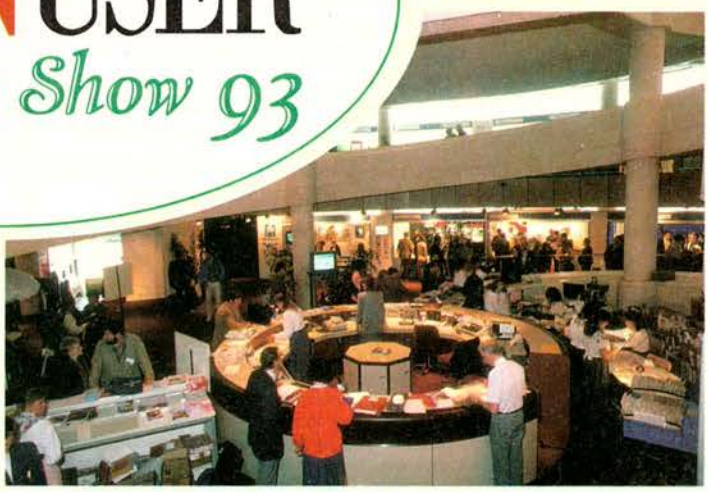

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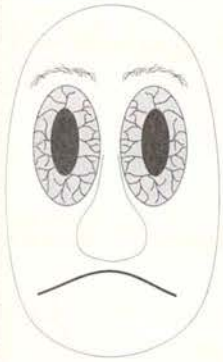

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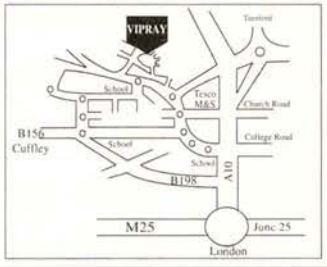

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The Falcon has landed

I READ your editorial in the February issue with a wry smile. While agreeing with some of what you say about the Amiga Games Machine you seem to have forgotten that in 1991 Atari's advertisement in the press stated that the ST was *More than just great games*. Our Family Curriculum pack was the first educational package launched at under £400.

Our TV advert featured Einstein, Van Gogh and a musician to emphasise the *real computing* story (and was nominated for a BAFTA advertising award) and in 1992 the Family Curriculum II pack at the new price of £299 had a phenomenal Christmas and is still the top selling educational computer pack on the market.

We are now, however, in the process of launching the Atari Falcon, a 32-bit dream machine with the Motorola DSP chip for superb digital data manipulation. Oh, and it will play really good true colour games.

The fact that I read your magazine disproves your theory that we don't take notice of the Acorn market. 1993 will prove we are not fading away, but anyway thanks for the entertainment. – **Darryl Still, Atari Corporation UK Ltd.**

● *What can we say, we're flattered that* Acorn Computing *is being read so widely.*

Upgrade regrets

I FEEL the I've made a mistake in upgrading my computers (440/1 and A3000) to Risc OS 3.10 and have achieved a distinct reduction in the performance of my most-used applications.

If I had not bent so many pins removing the old chips I would try to put them back again. Among the most irritating problems are:

Impression 2.17: How do you set all these new variables of memory and font cache? I get much slower, poorer printouts on the Laser Direct printer and hang ups when transferring lots of text between documents. There are also continuous error messages when using the LD printer driver.

Multistore V11: This program works in its normal way, spoilt only by the fact that I cannot get it to print out on the Star LC24-200 even though the new drivers include one specifically for this printer.

Scan Light Plus 256. This simply does not work at all.

I was about to buy the Eureka spreadsheet and Artworks but am now hanging fire till I can find out if these programs will run properly on the new, slower, less user-friendly operating system. – **D. Fox, Cardiff.**

● *It's true that some software runs slower on the newer operating system, because it's doing so much more – for example, disk accessing is often slower as the software is checking for different formats.*

The problem is particularly true where the upgrade is to a machine that only has an ARM2 chip, with the additional upgrade to the faster chip the speed problems vanish.

Where software fails to work, or works badly, you should obtain upgrades from the original suppliers – most will supply new software free of charge. As for setting the new variables, just use the !Configure application in the Apps directory – there's no need to save the configuration file.

The main problem we've found is that although the desktop boot file is a really clever idea it actually saves far too much information and if used unchecked you'll get requests for all sorts of floppies and so forth that make the whole concept silly.

We recommend creating the !Boot file in the approved way then loading it into !Edit (just Shift+double-click) and then removing every file reference you don't want.

Also having the Pinboard information included in the !boot file is unhelpful because you might want to alter the backdrop, for example, but resaving the entire !boot file will mean you'll have to edit it again.

The solution is to save the Pinboard file separately and remove all references to Pinboard from the !boot file, but at the end of the !boot file add:

```
Run
```

then Shift+drag the icon of the saved Pinboard file into the !boot file. You'll then have something like:

```
Run adfs::Winnie.$.Utils.Pinboard
```

Now you can alter the Pinboard file without it affecting your preferred !boot sequence.

Tape to disk transfer

I AM sure that my question is naively simple but how do I transfer a machine code program from tape to disk?

A game I have consists of three programs. The first two are Basic (which I can transfer) but the third is written in machine code. I hope you can help me since I am sick of spending untold minutes, only for the loading process to fail about half the time. – **D. L. Sharp, Whitley Bay, Tyne and Wear.**

● *Unfortunately you haven't actually described what the problem is. Does fail mean that the machine code won't load at all, or that a fault occurs halfway through, or what?*

That aside there are a number of considerations here: The main one being that if the program is a commercial one what you are trying to do is illegal.

On the technical side, the first point is that if you are simply using:

```
*LOAD ""
```

the program will be almost certainly be loading itself into the disk work space and as soon as you switch to the disk system the file will become corrupted. The same problem applies when you attempt to reload from disk as the machine code will want to run in the disk work space.

It is possible to circumvent problems

On the backdrop

IN previous issues of *Acorn Computing* I have seen pictures of the desktop background and on it there are file icons. Can you please tell me if these are actual files that can be run? If so how are the files put on the backdrop? The only file that I can get to go on the backdrop is !Menon which has the option in its setup menu. I have an Archimedes 410/1 with 2Mb of RAM. – **A. Hall, St Asaph, Clwyd.**

● The program in question is most Pinboard which is part of Risc OS 3, although there is a PD program called !PlaceIt which does the same job, although it takes up a fair amount of memory.

Both these programs allow you to place icons on the desktop and run them by double-clicking, although if you use !Menon that is just as good. Both !PlaceIt and Pinboard allow you to alter the background to show a sprite as well, either scaled to fit or tiled across the back, though, again, this eats your memory.

like this. For example many years ago I managed to get a machine code program that occupied 28k to work from disk, but it took a lot of patience, disassembling some of the code to see what it was doing and a block of sideways ram, to achieve it.

Choosing a hard disk

I CURRENTLY have an A3000 computer with 2Mb of ram and Risc OS 3 for home use, including DTP, graphics and programming. This entails a lot of moving around of files. To go with this I have over 300 disks with programs and files on.

For about four months I have thought of upgrading to a hard disk drive. Now that there are a lot more versions on the market I was wondering if you could help me decide what type would be most efficient for my use. I was looking for around 80Mb. As I only have ARM2 would it be worth upgrading to ARM3 to make accessing and creating of files faster? – **C. A. Shepherd, Poynton, Stockport.**

● *It's impossible to advise which would be the best hard drive to buy because they all work and that's the main thing. The question is always a matter of later expansion.*

For example you could buy a Copestake internal IDE hard drive which is neat and compact but you'll find your expansion capabilities are then limited if you need them. *Or there's the HCCS micro-podule system which can have a 60Mb hard disk, SCSI port and another expansion, all internally but it costs more.*

There's the option of a A3000 SCSI card and the choice of any number of hard drives to hang on it externally, or simply an external IDE drive, which again prevents further expansion. You pays your money and takes your choice.

Having an ARM3 for faster disk access is not logical because the speed of file handling is controlled almost entirely by the disk drive, the faster the drive the faster the file accesses.

Up your family tree

I AM writing a family tree database system for my A-Level and City and Guilds computing projects. As there are hardly any such programs (besides Ancestry) I am contemplating marketing the A-Level version. The City and Guilds program is more file-based whereas the A-Level one lives in the desktop. – **G. Rogers, West Bridgford, Nottingham.**

● *Apart from Ancestry there's also Micro-Aid's Genealogy (0465 82288).*

Workspace problems

YOUR Letters column in *The Micro User*, July 1990, carried a very useful program for reading line numbers from a Basic program loaded into the computer's memory. The program works very well on the BBC Micro but will not work on my Archimedes 310. Could it be that the DATA pointer is not located in zero page on the Archimedes or is there some other reason?

Would it be possible to modify this program so that it operates on the Archimedes? Alternatively is there a SYS call that might perform this function and if so how could it be utilised? – **R. R. Hull, Scorton, Lancs.**

● *Memory storage on the 32-bit machines is utterly different to the old BBC Micros so this type of routine doesn't stand a chance of working – the Basic workspace starts at &8000, and PAGE is at &8F00.*

The problem that this routine was trying to solve shouldn't occur with Basic V because of the additional memory space and facilities available.

High class graphics

I AM interested in the graphical capabilities of Acorn computers in the area of games and in particular simulations. Recently I was reading a friend's Computer and Video Games magazine and was interested in the reviews of simulation games on the PC, such as F-15 III, Harrier Jump Jet, Maximum Overkill and X-Wing.

These games were given rave reviews, mostly for their graphical quality. From the screen shots shown the graphics did indeed appear to be excellent.

I would be grateful if you could tell me whether graphics such as these are possible on the Acorn and whether games such as these will ever be available. – **N. A. Ward, Westoning, Bedfordshire.**

● *The short answer is yes – but good quality graphics require one of two things: A good artist and a good programmer. You only have to look at some of the graphic work produced by talented artists such as Mike Goldberg on the 8-bit machines to know that it's the artist not the machine that really counts.*

When the program is a simulation the artist is only needed for between-play screens – this is where the programmer comes in. If you saw Interdictor on last month's cover disk you can see how good the programming is but the shapes of the objects are all just simple flat surfaces.

Some of the latest PC games, for the faster machines, have begun to use the simple Phong shading algorithm to make surfaces look curved. It takes a good programmer to write the software to do the shading so that it still runs fast enough to be playable – the Acorn ARM3 machines are certainly fast enough but no programmer has tried shading yet.

It's about time someone took up the challenge.

Getting the hardcopy out

IT is not the policy of the college I attend to buy Acorn computers so to port any work across I need to convert it to a native PC format. Sprites can easily be converted to TIFF files and I can print, using the laser, if I convert my Draw files into Postscript. But to print these Postscript files the teacher needs to exit to Dos and print from his computer. (He seldom has time.)

In order to print from another public computer on the network I need to convert my Draw files to EPS (Encapsulated Postscript) as opposed to standard Postscript. How do I do this? I have a A420/1 42HD with Risc OS 3. – **D. Barron, Hull.**

● *At present your only solution is to get ArtWorks which can export an EPS format file.*

All programs printed in this magazine are exact reproductions of listings taken from the running programs which have been thoroughly tested.

However, on the rare occasions when mistakes occur, corrections are published as a matter of urgency.

Should you encounter error messages when you type in the program, they will almost certainly be the result of your own typing mistakes.

Unfortunately we cannot answer personal programming queries concerning mistakes. Of course letters about suggested errors will be investigated without delay, but any replies found necessary will only appear in these pages

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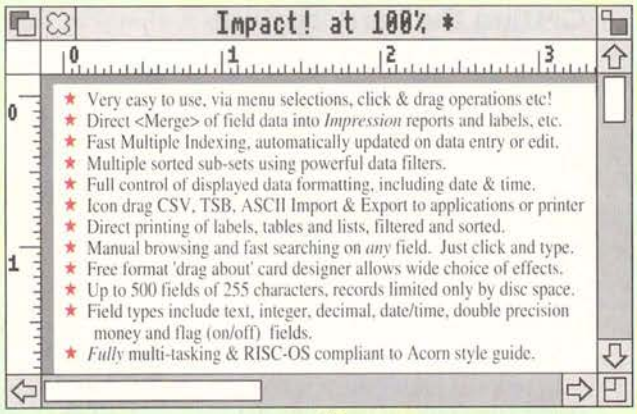
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3
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1
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Chelsfield 92
Circle SW 100
CJ Computing 94-95
Clares 36
Colton Software 4
Computeck 64
Computer Concepts IBC,40,68
Contex 100
CSS 94-95
CU Electronics 88
Dabhand Computing 8,9
Dabs Press 10,11
Daco Systems 94-95
Dalriada Datatech 92
Datastore 97
Davyn Computers 94-95
DD International 92
Electronic Solutions 23
Emerald Publishing 90
Emross Trading 97
Fabis Computers 58
Five Star Mkt 82
Ground Control 70
I.C.S (Ian Copestake S/W) 12-14,16
Ideal Home Plus 93
J.R.Lectronics 94-95
Kendal Computers 73
Kettering 94-95
Kingsway Computers 63
Krisalis 54-57
L.C.L 97
Longman Logotron 18
Magnetic Image 46
Micro Aid 88
Micro Laser Design 97
Morley IFC,3
Norwich Computers 74
Oregon 67
Pineapple 74
Ptrs in Education 92
Pyramid Computers 50
QD Computing 63
Quantum Software 58
Risc Developments 20,35,50
RW Electronics 73
Sigma Press 92
Simtec 63
Skyfall PD 39
Software 42 46,70
Software Bargains 45,50
SSERC 50
Superior Software ..... OBC
The Computer Depot 88
The Datastream 38
TMJ 100
Unique Way 94-95
Vipray 94-95
Watford 76-87
Yarm Computers 94-95

SUPPLEMENT INDEX

Atomwide ..... OBC
Automatic Services 15
Contex 18
Davyn C Services 6
DPM Electronics 6
Explan 9
I.C.S (Ian Copstake S/W) 3
Micro-Tech 12
Mikrodaisy 12
Northen Micromedia 12
Resource 9
Rickett Ed 12
Selective Software 19
Senlac 18
Spacetech 22
Stallion Software 6
Widgit Software 10
Word Processing 15

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contents

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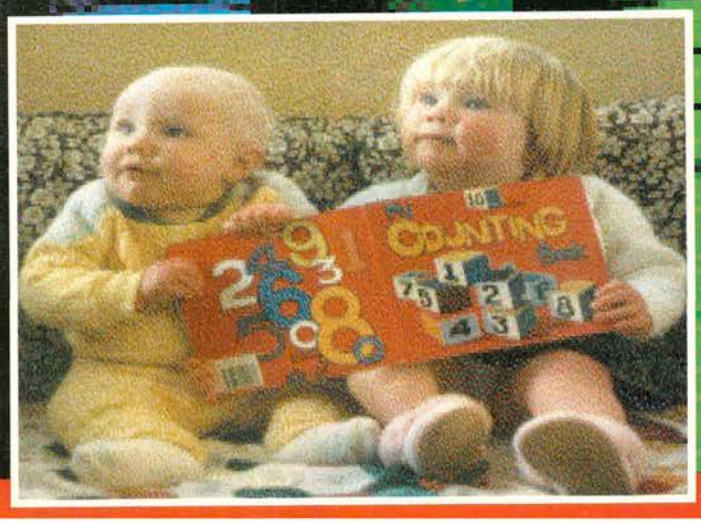

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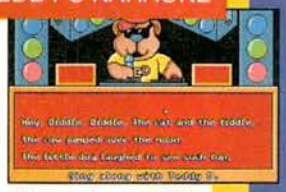

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Designs on childr

ONE of the biggest developments in the use of computers in education has been in their potential for art and design. This has been brought about by developments in three areas: Increases in memory and processor speed, the improved range of input devices – mice, joysticks, tracker balls, scanners, digitisers and graphics tablets – and ever cheaper sources for output.

Laser printers have never been cheaper and some astonishingly economic bubble and ink jet printers are available. There is an increasingly wide range of plotters as well as a plethora of cheap and middle priced dot matrix printers some of which can also produce reasonable colour.

Of course, all of the hardware is completely worthless without software. Approximately 75 art and 50 design packages are listed in the Acorn Educational Directory so it would seem highly unlikely that you can't find the package to suit your children. But where do you start?

You need to consider why you want to use the computer. There are at least two answers: The first is that children should be aware that they are growing up in an age where computers are used in just about every facet of art and design. Secondly, we have a National Curriculum which expects all children to be able to use computers to *communicate* and *manipulate information* including images.

Furthermore, teachers are required to report to parents the level in the National Curriculum that children have reached in their use of Information Technology at the end of each key stage.

It is important to consider quite carefully whether the software will actually enable the children to carry out the kinds of operations set out in the National Curriculum. Some surprisingly simple and inexpensive art and design programs are quite sufficient for most purposes and there may be no need to spend huge sums of money.

One of the things that you will very quickly discover is that no single package has all the features you would like. Some have so few that any attempt to carry out work of quality involves considerable degrees of problem solving.

Others have so many features that you may never begin to discover, or use, half of them.

Some are distinctly more to do with *art* and there are those which are more *design* oriented. Many packages reflect the difficulty of distinguishing between the two, by combining many features from both.

Generally speaking, art packages have better tools for applying colour, filling areas and creating textures. Design packages have more powerful tools for creating and rotating shapes and the precise placing and movement of lines and objects.

After a number of years playing and working with computer art and design programs I would suggest the following checklist of features which I have found helpful when working with children:

Text

For posters, packaging labels or greetings cards it helps enormously if the package is able to give a range of control over the style, size and even orientation of text.

Paint brush

A responsive paint brush is essential in an art package. I have used used programs where the software has struggled to keep up with the hand, making it difficult to make bold and smooth marks.

Spray gun/can

It is important to be able to vary the size and intensity of the spray and often useful to be able to select its shape, perhaps in squares, rectangles, circles and ellipses. It also needs to be just as responsive as the paint brush.

Drawing tools

A general purpose tool or a range of tools is useful for drawing straight lines, closed or open shapes, regular polygons, ellipses and circles. It can also be important for drawings which require detailed outlines.

Grid and grid lock

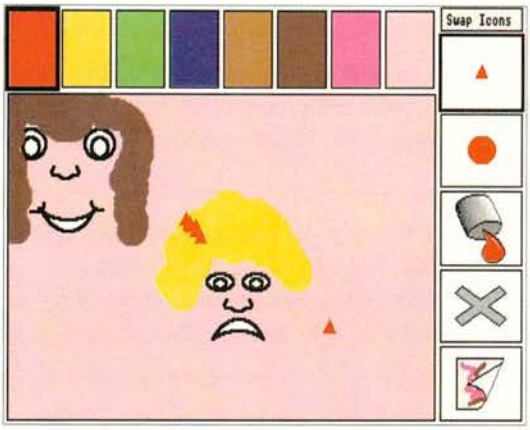
Essential in drawing and quite useful in art programs is an on-screen grid with full control over the size of the squares and number of divisions. Even better if you are able to lock on to the grid so that the ends of lines snap into place.

Fill

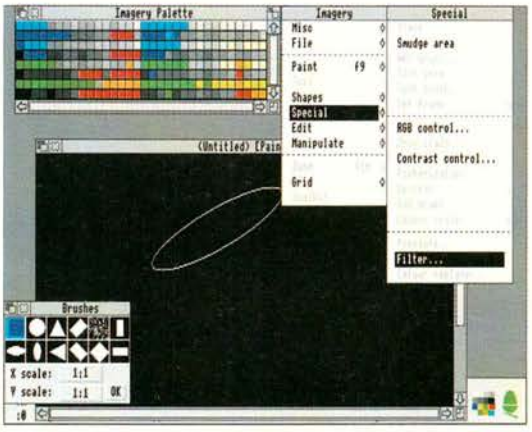
Enables you to colour in areas quickly. Some of the more expensive packages give a range of filling options so you can create curved or textured surfaces but some of these can be quite complex.

Palette

A range of colours which is wide enough to realistically create more difficult shades such as the bark of a tree or human flesh. This is possible with



● *Honormead's Scribble is ideal for the youngest children and those with Special Needs*



● *Imagery manipulates graphics and is again aimed at Key Stages 3 and 4*

One of the things that you will very quickly discover is that no single package has all the features you would like

The choice of art and design products is vast. John Clemence assesses what parents and teachers should be looking for

packages which allow 256 colour modes but more difficult with the cheaper programs which work in 12 colours.

Mix or wash

This is desirable and can often be achieved by a good quality spray gun but can be equally useful if it is a facility available to all tools.

Cutting, copying and pasting

Flexibility and speed allowing one area of the screen to be moved or copied to another. It can be used to great effect and ideas of symmetry can be explored where areas can be reflected and/or rotated. Some packages will also allow you to use such areas as a paint brush, spray or drawing tool. You may even be able to save them for use in other work.

Vertical and horizontal locking of tools

Particularly valuable for brick work and fencing effects and for getting lines horizontal or vertical.

Zoom

Useful for sorting out fine detail or correcting small mistakes.

Eraser and undo

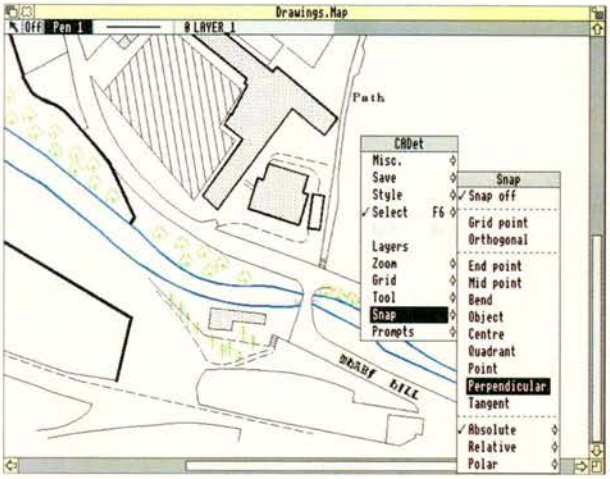
Many programs have no obvious facility for erasing mistakes though you can apply the background colour over the mistake which is probably more useful than something which completely erases the area and leaves a white area to be re-filled. The undo facility is a tool I use a lot. It very often only undoes the last thing you did so you need to be sure that you don't attempt some other remedy when undoing might be the most effective course of action.

Colour Shifting

Allows all the colours to moved around so that red might become blue, blue becomes yellow, yellow becomes green, and so on.

My final consideration would be to find out what control the program gives over the printer. My children frequently choose picture sizes which won't even fit on to a disk when they try to save them, much less on to the size of paper our colour printer can handle. But we use an art package which allows us to measure the size of the printed picture in A4 sheets so we know that it can be made the correct size when we come to the printing stage.

The programs illustrated on the age lines reflect those with which I have some experience and I have used successfully with the children at my school. It is not a comprehensive list, nor is it definitive.



● *CADet and its big brother ProCAD are definitely aimed at the design element*

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		Cadet 8	
		SmartFiler 5	
		Imagery 14	
		LinCad 13	
	Poster 5		
	Trace 12		
	Chameleon 5		
	Vector 5		
	Draw Plus 10		
	Draw 9		
	Craft Shop 1&2 5		
My World	2		
Smart		5	

Art Ageline

KEY STAGE 1 (5-7)	KEY STAGE 2 (7-11)	KEY STAGE 3 (11-14)	KEY STAGE 4 (14-16)
Glimpse			9
		Atelier	8
		Pro-Artisan	7
	Artisan		7
	Art Works		15
	RevXtra		6
	Revelation II		6
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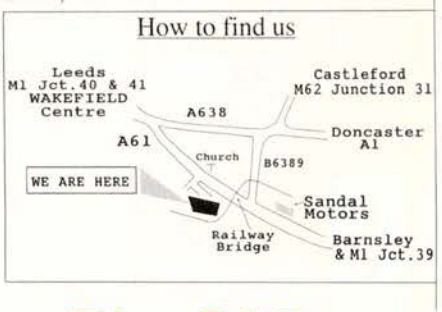

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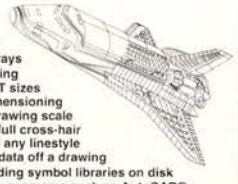

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There's a word for it

Pat Janes assesses the English situation in the 32-bit software market

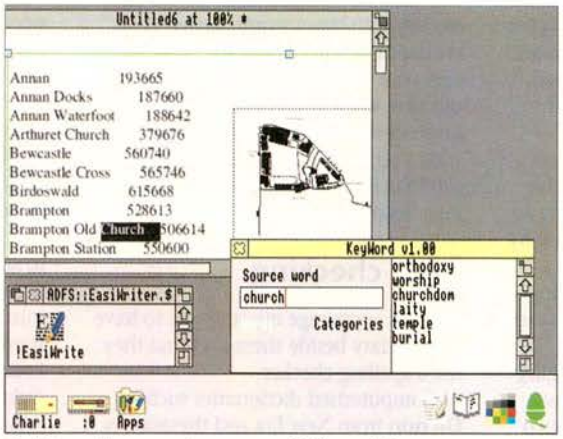
A PROGRAM is only as good as the people using it and their imagination in making the work interesting, challenging and exciting. Over the last couple of years, several products have been released which have made the transition from school to home.

My World is one of the most successful in this area and the Nursery pack is ideal for use with pre-school children who'll find the teddy bears very appealing.

I am very much in favour of children having hands-on experience as soon as possible. Pre-school children can benefit from this form of learning and it doesn't preclude story-telling, books and tactile learning with parents and peers.

As you'd expect with titles from NW Semerc the programs can also be used with those with severe or special learning difficulties, while other programs in the suite are suitable for middle and even upper/high school students.

The addition of a Concept or overlay keyboard can make all the difference and it is not as difficult to create your own overlays as you might think.



● *Integrating wordprocessor, DTP and thesaurus*

Fun School from Europress Software is now in its fourth generation and whether you opt for Fun School 2, 3 or 4 children enjoy the graphics and music. An adult can also change the difficulty levels and as the series is primarily aimed at the home market it reinforces work done in the classroom.

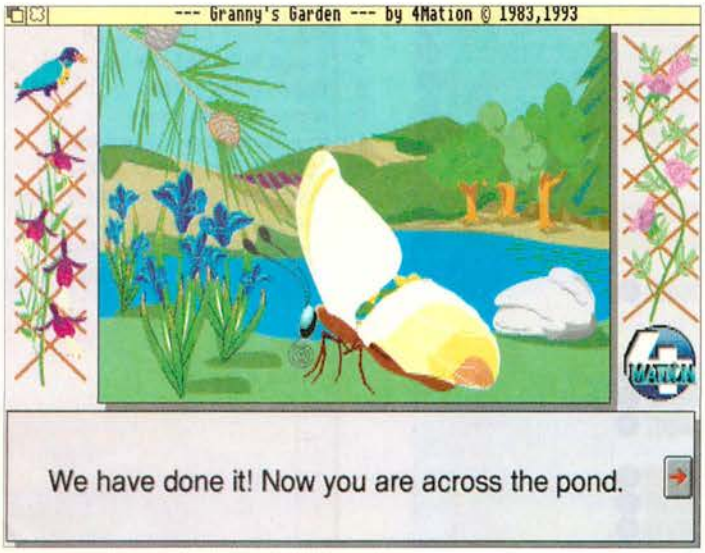
I enjoyed working with **10/10 English** by 10/10 Software which operates equally well in school or home setting. The arcade style selection appeals to children and with the advent of the National Curriculum's emphasis on grammar and spelling this program would meet a need to make what could be dry topics more enjoyable.

The automatic marking of ATs covered and improvement make it very useful as it also tells you what is needed by each target rather than just giving you the AT number.

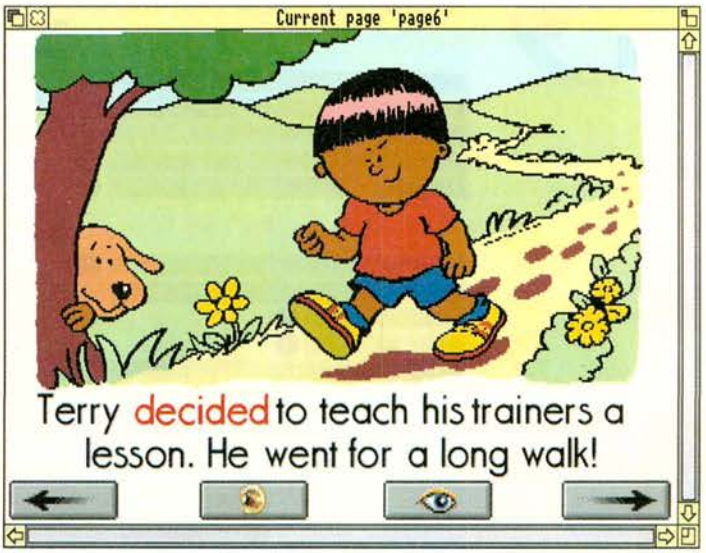
A program which encourages the left to right eye movement is a useful way to develop the correct eye movement used in reading. **Noot** (4Mation) and **Podd** (ESM) can help here and I particularly like Noot as you, the adult, can take part in the design.

ScreenPlay also allows this adult involvement and bridging the gap between finding and reading words and writing simple stories. The animation side is a bonus. A number of products on the market, such as **BookMaker** (Keyboard Technology 0509 610706), let child or adult put their own books together regardless of reading ability.

EasyReader (Contex Computing 0234 838347) can be used successfully to develop word recognition and reading skills. The beauty of this



● *Using adventure to improve reading skills with Granny's Garden*



● *Naughty Stories provides a new way of telling and reading stories*

program is that it allows the teacher to adopt a particular reading scheme as you can re-program the word and sentence lists to the scheme you use.

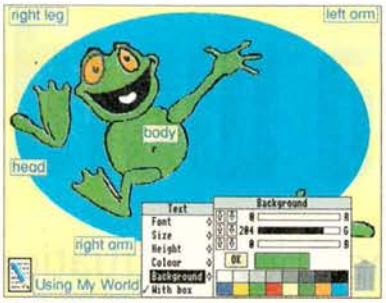
It is good to see some of the old 8-bit favourites being updated for the 32-bit range. One sure winner must be the excellent **Granny's Garden** (4Mation) which has been totally re-styled keeping the reading, mapping and puzzle-solving but adding sound, beautiful graphics and excellent animation.

Also using the power of the 32-bit machines are Sherston with their **Naughty Stories** series. Lapped up by pre-school and infants, the stories come in book form and on computer with the short stories beautifully read, drawn and animated. Sound effects are used well and the ability to choose individual words to be spoken is ideal.

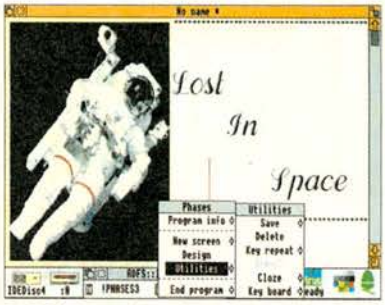
Charles Cripps is a noted writer on spelling and reading skills and his **Eye for Spelling** and **Hands on Spelling** are a real help but I like **Spelling – week by week**, and **Star Spell Plus** is worth a mention too. Using different spelling programs is useful as they reinforce each other and add variety.

Increasing vocabulary is challenging for teacher and student. Quite a few programs include wordsearches – such as **Fun School 3 (over 7s)**, **10/10 English** or **WordPuzzle** (NW Semerc). It's a concept which transfers very well on to a computer. **Tiles** (Brain Games 0482 649288) is certainly challenging for older ages and is a mixture of crossword and scrabble with the foreign language element as an added extra.

Sooner rather than later, you'll need a wordprocessor. **Pendown** (Longman Logotron) is a particular favourite but the key is to buy a wordprocessor you are happiest with to suit the range of uses your class or family may need. All can save work in text/Ascii format and Impression and Impression Junior come with a set of *loaders* so, for example, you can load FirstWord Plus, View and Pipedream files directly.



● *My World lets you create your own pictures or you can choose from a selection of topic disks*



● *32-bit machines have seen the advent of packages using pictures, sound and text to tell stories as with Phases 3*

Spell checking

I always encourage my students to have a dictionary beside them and that they use a spelling checker.

Computerised dictionaries such as **Diction** from New Era and thesauruses such as **Desktop Thesaurus** (Risc Developments 0727 40303) and **KeyWord** (Really Good Software 0582 761395) are also available.

Foreign language dictionaries are especially useful with **Lexicon** (Stallion Software 0225 483236) and **Lexique** (New Era Software 0283 812818) being very straightforward to use.

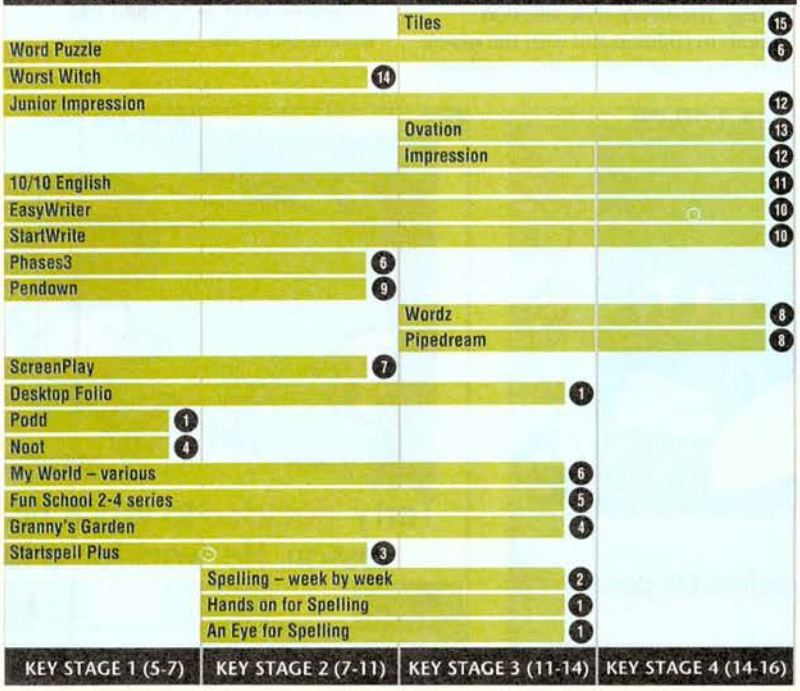
Presentation of work can be made more interesting with a good wordprocessor and the use of outline fonts on the 32-bit adds to the flexibility. New fonts can be added at any time whether you want a typeface to imitate the letters taught in infant and lower schools such as **Cheynes** (Electronic Font Foundry 0344 28698) or one of their more elaborate fonts.

For the more adventurous the ability to add graphics, tables and so on will be needed. **Phases** (NW Semerc) is a nice introduction with a good range of support disks and clip art, as is **Desktop Folio** (ESM) again including support disks with children in mind.

But Ovation and Impression will take you from the simplest form of illustrated report to the book. If you feel this is beyond your skills there are a couple of books on the market which will help, while **Good Impression** and **First Impression** (Word Processing 0902 397351) are tutorials with demonstration/example disks which take you through Impression giving tasks and ideas as they go.

> Using different spelling programs is useful as they reinforce each other and add variety

English age line



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1 ESM 0233 65445
2 Chalksoft 0775 769518
3 Fisher Marriott 0203 616325
4 4Mation 0271 25353
5 Europress Software 0625 878888
6 NW Semerc 061-627 4469
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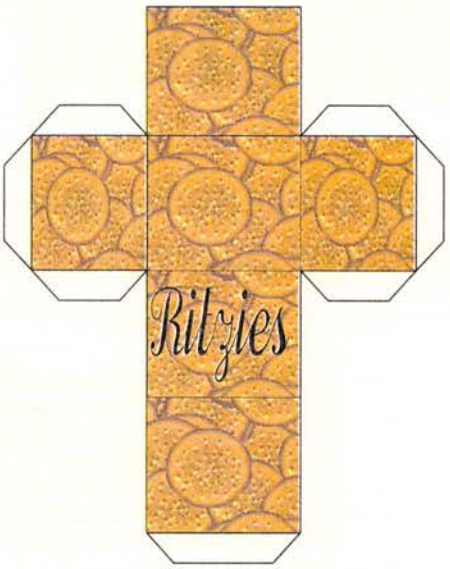

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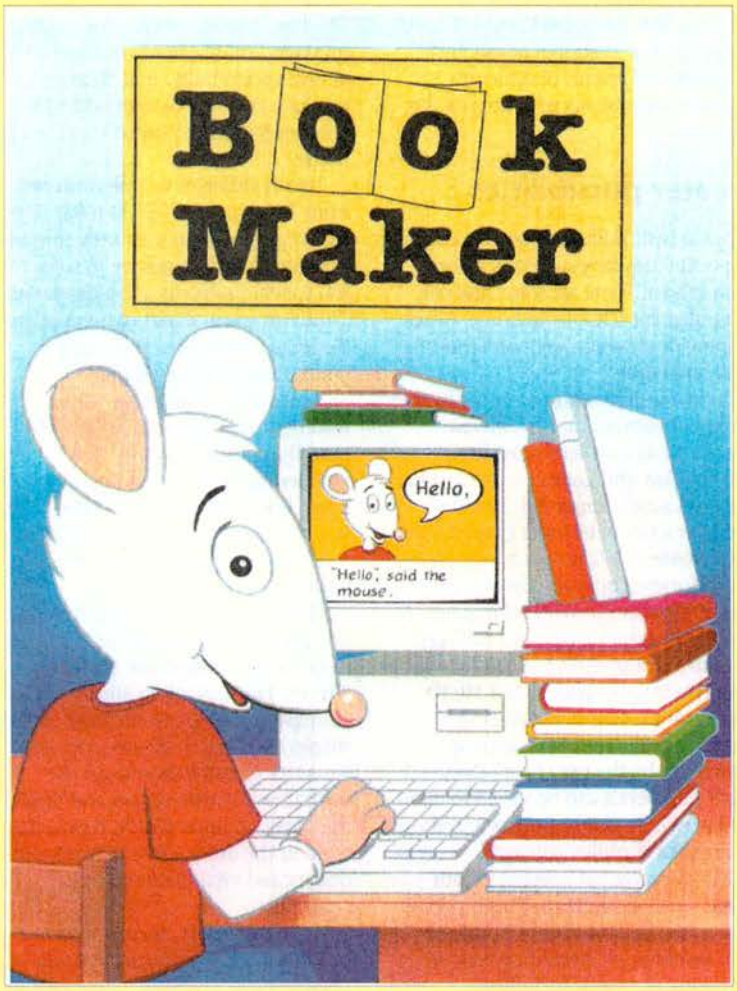

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Counting the differences

Can computers really improve the standard of maths education? Rog Frost investigates

MATHEMATICS requires youngsters to have a fairly limited amount of knowledge but a high level of skill in using it. Many programs for mathematics on the 32-bit machines reflect this need by concentrating on practice, often dressed up into an entertaining game.

There is a tendency for such programs to concentrate on the four rules of addition, subtraction, multiplication and division and programs of this genre can be suitable for a wide variety of abilities and ages.

So, let's start at the young end by considering youngsters who are just beginning to appreciate the concept of number. These children can be offered simple counting activities and can learn to match a symbol, such as *3* with a set of three items.

Suitable software could include **The Teddy Bears Picnic** from Sherston Software (0666 840433), HS Software's (0792 204519) *Maths Pack*, Europress's (0625 878888) **Fun School** or **Farmer Giles** from Computer Tutorial Services (0983 294333). All of these deal with the nature of number, what it is and what the figures represent.

Using these programs will help youngsters to develop skills such as classification, matching and sequencing. Higher levels on some programs will introduce simple computation skills such as adding a couple of numbers. Some packs introduce the use of money at this early stage too.

The producers of such software would probably not see these programs as being totally standalone items. After all, it would be unreasonable to expect a four or five year old to use computer programs without some support, or to learn about number without handling real objects.

Indeed, it is not unusual for programs that are aimed at such young users to have really difficult text on menu pages. What is important is that a supervisor allows the youngsters to experiment and tries to find opportunities to practise similar skills away from the computer.

If I were asked to pick one program for allowing youngsters to investigate the nature of number it would be **Animated Numbers** from Sherston Software. This has a lively and colourful display, makes its simple points well, but avoids the pitfalls of difficult language or problems with driving the program.

Greater possibilities

Once the basic skills have been mastered, the possibilities for youngsters become much greater. There are some first rate packs, ideal for school and home, which will provide entertainment and learning at the same time.

There is much opportunity for further practice of basic skills. HS Software produce some excellent programs in both the **Fun and Games** series and the TV games series. *Burger Boy* provides money practice with super graphics and sound. *Kevin's Quiz* provides straightforward questions on the four rules of number but with such good speech and graphics that it is real fun.

10/10 Software (0742 780370) have recently released a pack called **10/10 Mathematics**. This is geared at practising skills from the National Curriculum by the use of well-designed games. Skill levels can be varied to allow it to be used by raw beginners and those coping with complex concepts.

Sherston have yet another superb product in **Connections**. This is perhaps more suited to school than home use but it provides an interesting way of comparing numbers, including fractions, money and graphical numbers.

Many of the programs already mentioned are still useful for the junior age range but a whole set of new options becomes available as well. Parents will probably hope that their children are well on the way to mastering the four rules, and the computer software available reflects these changes with more in the way of investigative programs.

Space and shape along with geometry and algebra begin to appear in maths programs.

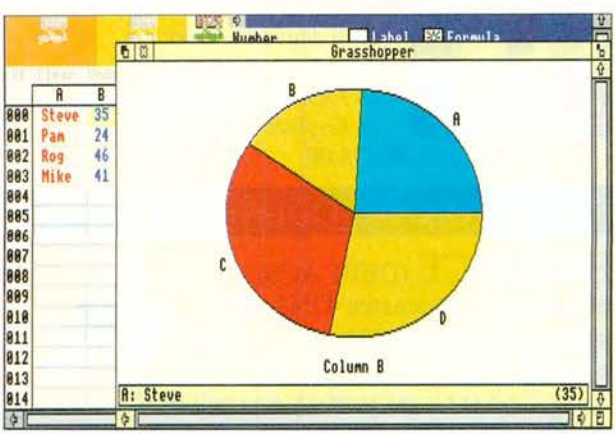
An old favourite of mine on the BBC Micro, now available for the 32-bit range, is **Space Mission Mada** again from Sherston. This program is loved by children, perhaps because of its green message, and the mathematics is done almost incidentally. It is, though, a program that can be learned and is another pack more suited to school than home.

Totally different is **Polyominoes** from Topologika (0733 244682). This maths program has very little number content. Instead, users try to solve (or set) spatial problems using tile patterns. This is an integral part of the maths National Curriculum and many youngsters find it good fun.

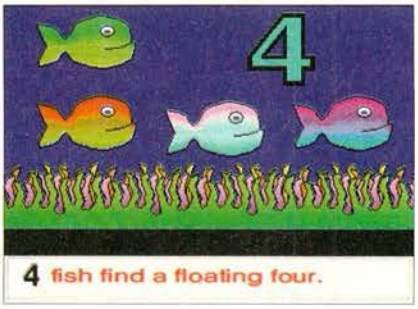
Mathematics teachers who are reading this article will probably be jumping up and down by now, wondering when I am going to mention Logo. For those who don't know, Logo is a programming language designed as a mechanism for youngsters to solve problems.

The National Curriculum has made one part of Logo, called turtle graphics, more or less compulsory for pupils from 7 to 16. Turtle graphics allows youngsters to explore distances, angles, shapes and sizes. It allows them to sequence commands and get the computer to create shapes and drawings their way. In other words, it puts the child in the driving seat to learn and understand vital mathematical concepts.

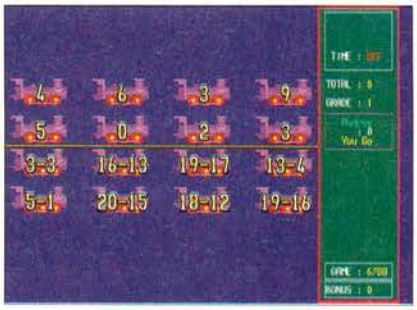
Not surprisingly, several software publishers have produced versions of Logo or turtle graphics. These vary in



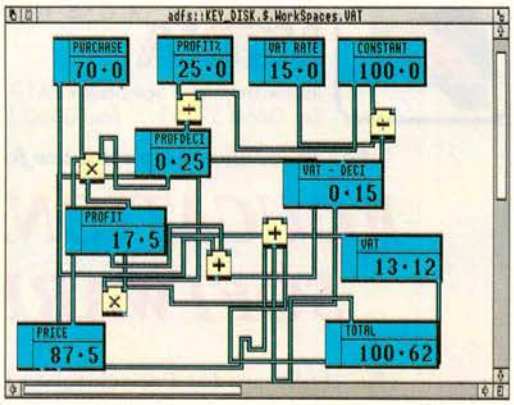
● *Newman Software's Grasshopper is a basic spreadsheet with superb graph facilities*



● *10/10 Mathematics presents a range of programs all linked to the National Curriculum*



● *Sherston's Animated Numbers has lovely graphics and basic concepts for key stage 1*



● *Longman Logotron's Numerator for youngsters in key stages 3 and 4 who enjoy numbers*

quality and in their ease of use but in the end, the one to buy for home use might depend on the variant that the school uses.

The Crystal Rain Forest, a Sherston product, does not sound at first like a Logo program. It is another of Sherston's fine exploratory products with a green environment message. As youngsters explore the rain forest they hardly realise that they are performing Logo-type tasks.

The final part of the game involves using a proper turtle graphics pack to design a crystal. This part can, in fact, be used separately from the game. As always with Sherston, the whole pack is superb and well researched.

My own number one choice for turtle graphics is **ScreenTurtle** from Topologika. Youngsters find this easy to use and love the use of colour. It is very flexible and suitable for junior and secondary needs and for pupils with special needs. ScreenTurtle would be my choice if I could have just one pack for a junior-aged child.

The *standard* Logo is produced by Longman Logotron (0223 425558). The program has been transferred from the BBC Micro and has a certain lack of friendliness and a new version called **FirstLogo** is on its way. Despite this it is used in a large number of schools, partly because of the number of extra facilities in the worlds of science and music which are available for it. Once youngsters have learned to cope with its foibles, it is really quite excellent.

For pupils in the secondary phase the spreadsheet becomes an important mathematical tool. Use of such tools is considered vital on the National Curriculum.

Spreadsheet contenders

My favourite secondary program is **Grasshopper** from Newman Software (021-476 1181). This pack has been written for children and is an ideal tool for investigating number patterns and sequences. It is also simple but superb at producing graphs and has easy-to-operate printing routines.

DeskTop Office from Minerva (0392 437756) is an integrated suite that includes database, wordprocessor, spreadsheet and graph packages. It is very good value for money.

Acorn Advance is a Risc OS 3 integrated suite which is about to be released from Acorn (0223 254254). Other contenders in the spreadsheet stakes are **Schema**, a professional pack published by Clares (0606 48511) which is also about to be upgraded and **Eureka** from Longman Logotron. Both are first rate programs for those who need powerful spreadsheet features.

I would hate to wrap up this article on mathematics software without mentioning games. Just think of the maths involved when using a flight simulator or a golf game. Some of the racing car games involve calculations and decisions.

Adventure programs such as **Wonderland** published by Virgin Mastertronic create opportunities for problem solving of a mathematical kind and huge numbers of puzzle programs are also available very cheaply from the public domain libraries. These programs – many of them of high quality – can often provide number practice as a game is played.

When using mathematics programs with children do remember that maths should be a lot of fun. Make sure that the program is really suitable for the youngster concerned. Software that provides impossible challenges for a child or programs that are too trivial will end up by killing interest in mathematics.

Maths age line

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1 Sherston Software
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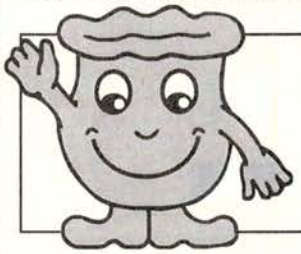

Pip Investigates
Dinosaurs
Datahandling for
Key Stage 1

Other programs and resources available to support the National Curriculum include:
Pigeonhole
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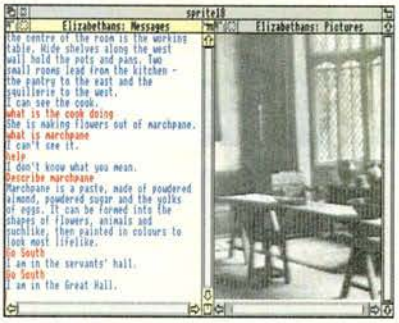
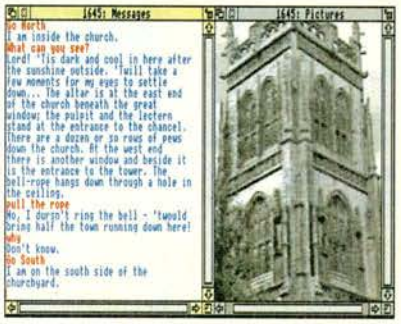
A matter of time

Frank Jukes sets off to discover what's what with history-based packages


sprite18
Elizabethans: Messages
Elizabethans: Pictures
the centre of the room is the working table. Wide shelves along the west wall hold the pots and pans. Two small rooms lead from the kitchen - the pantry to the east and the squillerie to the west.
I can see the cook.
What is the cook doing
She is making flowers out of marchpane.
What is marchpane
I can't see it.
Help
I don't know what you mean.
Describe marchpane
Marchpane is a paste, made of powdered almond, powdered sugar and the yolks of eggs. It can be formed into the shapes of flowers, animals and suchlike, then painted in colours to look most lifelike.
Go South
I am in the servants' hall.
Go South
I am in the Great Hall.

● *Relive past time with the LandMarks series whether Elizabeth I is your topic...*


1645: Messages
1645: Pictures
Go North
I am inside the church.
What can you see?
Lord! 'Tis dark and cool in here after the sunshine outside. 'Twill take a few moments for my eyes to settle down... The altar is at the east end of the church beneath the great window; the pulpit and the lectern stand at the entrance to the chancel. There are a dozen or so rows of pews down the church. At the west end there is another window and beside it is the entrance to the tower. The bell-rope hangs down through a hole in the ceiling.
Pull the rope
No, I durst'n ring the bell - 'twould bring half the town running down here!
Why
Don't know.
Go South
I am on the south side of the churchyard.

...or visiting the turmoil created by the English Civil War

THE pre-school to 16 age range has always been well catered for when it comes to History software for Acorn machines. Since the National Curriculum orders were published, the range of 32-bit software seems to have flourished.

Fairly predictably, the packages have concentrated on simulations or adventures of one kind or another. Suitable software can be found to support work throughout a large slice of history: The Romans, Ancient Greeks, Egyptians, Victorians, World War II and – of course – the ever-popular dinosaurs.

Sherston Software's (0666 840433) reputation for quality software is almost legendary. It is always apt, educationally sound, beautifully presented and complete with good curriculum support materials.

ArcVenture – The Egyptians and **ArcVenture II – The Romans** are typically excellent packages written for 8-12 year olds and are based on simulations of archaeological digs where children quickly become engrossed as they carefully scrape away soil to reveal the remains of artefacts from long ago.

As remains are unearthed it is possible to view reconstructions and learn something about them. This is achieved by sending would-be archaeologists back in time to examine and question people who lived and worked in and around the site. Most importantly, research away from the computer is encouraged which is always a sign of confidence in the program's quality.

In a similar vein **The Mary Rose** (Cambridgeshire Software House 0480 67945) offers a simulated exploration of a Tudor warship. Again, support materials are provided in abundance and work away from the computer is encouraged. The resource pack comes with excellent credentials being put together by the Mary Rose Trust and includes postcards, 35mm slides and books. Using Mary Rose a good deal of cross-curricular work is possible by children from the age of 9.

Longman Logotron's (0223 425558) **Landmarks** series includes Egypt, Aztecs, Columbus, Elizabeth 1, Second World War, Victorians and the Civil War. Capable of being used in their own right, the programs were originally written to complement programmes broadcast by BBC TV as part of their Schools' Television output.

The programs are designed to simulate a conversation with another child at an appropriate time in history. By asking questions and exploring the locality with their historic guide it is possible to build up a knowledge of everyday life at that particular time.

Longman Logotron intend the programs to be used by 5-14 year olds but I think they are being a little over optimistic at the younger end.

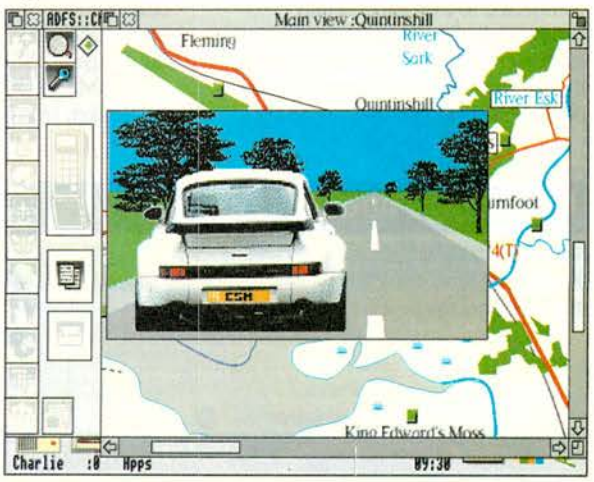
From my own experience, which quite obviously can not be definitive, and from talking with others, younger children find it difficult to use the programs.

Even with adult help to phrase questions and devise strategies they have problems in making the best of the material. Used with older children, from their more experienced perspective the programs are more successful. They are able to create much more useful interactions with their guides from the past and become fully involved in explorations which can be quite realistic. For such older children the programs come highly recommended

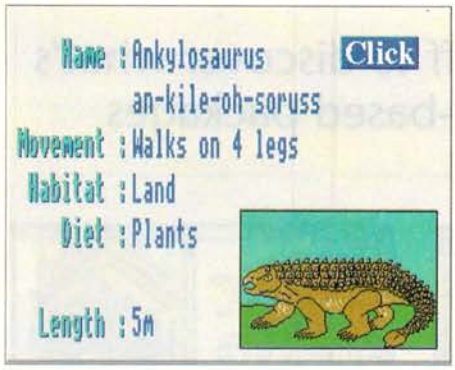
The ubiquitous dinosaur is a part of almost every primary school pupil's history diet and so – while Landmarks caters for the older child – Northern Micromedia (091-270 0424) have created **Pip Investigates Dinosaurs** for 6-8 year olds.

Like Landmarks and ArcVenture, Pip is built around an adventure. Unlike Landmarks and ArcVenture, it incorporates a simple database to provide the very young with their first taste of information handling – hitting two pteranodons with one rock, as it were.

While some adult help for the youngest children is needed to cope



● *On the trail of Robert the Bruce with Frontier 2000*



● *The simple style of Pip Investigates Dinosaurs is excellent for younger children*

● *ArcVenture puts you on an archaeological dig with 14 days to discover as much as you can...*

...you'll have to travel back in time though to satisfy the computer

The pre-school to 16 age range has always been well catered for

➤

with the dinosaurs' names, the program is written at just the right level to interest and encourage while offering another dimension to the more traditional approaches to the subject.

Studying the Romans, like that of dinosaurs, has long been traditional in our schools and with the advent of the National Curriculum it is now compulsory.

No one needs that kind of excuse, though, to use **Frontier 2000** from Cambridgeshire Software House (0480 67945). Starting with the Roman occupation of the North of England, particularly around the Carlisle area, the package provides opportunities for 7-14 year olds to explore trails set up by a retired Professor.

The trails cover much of the history of the area and are not limited to that of the Roman period: Robert The Bruce, the Civil War and Mary Queen of Scots all figure as does the more recent history of the railways and present day issues. Once again, high quality support materials are very much in evidence and include video and audio cassettes along with printed resources provided by Tullie House Museum in Carlisle. There is even a piece of Roman timber included in the pack.

With this high standard and wide range of support, the pack is clearly committed to a cross-curricular approach. Something which would enable a study of the area and changes in it through time to be made in some depth. Frontier 2000 uses the 32-bit machine to the full with the CD-Rom version including speech, superb scanned photograph resources and video clips.

For anyone interested in Britain Since the 1930s or Medieval Times, ESM's (0223 65445) **Time Traveller** series provides a wealth of material. The programs are easy to use, are based on historical databases and are intended to give pupils between the upper end of Key Stage 1 and Key Stage 4 a feeling for the passage of time and the chronological sequence of important events in history.

Using the timelines which the Time Travellers can provide, children are able to place important events into context. Included in the programs are textual or pictorial descriptions of people, times and places significant within the context of the timeline. The program provides a great deal of information and is not limited to text.

Many pictures are included and show more potential than simple illustration of the text. They give a good feeling of how things appeared in the past and, most usefully, can be exported to be used in work emanating from investigations based on the programs.

When thinking in terms of software for a subject such as History it is easy to forget content-free programs and the opportunities they offer for the development of an investigation.

A database such as **Junior Pinpoint** can be used to store and manipulate data relating to historical investigations undertaken by a class or an individual. Included with **Pinpoint**, Junior Pinpoint's big brother, is information from the burials register of Adel Church. It would not be too difficult to build up a similar database of local information or even one relating to an aspect of one of the National Curriculum's Study Units.

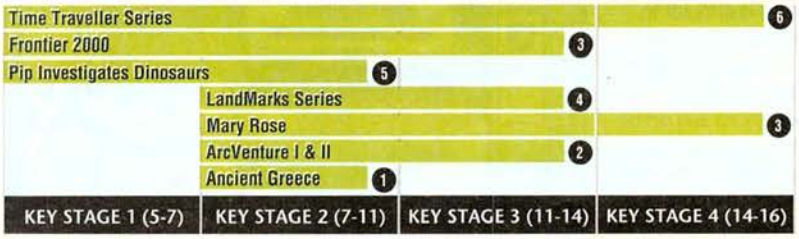
Taking work such as this a stage further could involve the creation of a Genesis application, something which several schools have undertaken with a good deal of success. If you prefer the ready-made packaged Anglia Television's (0603 615151) **Key Plus** relational database has a host of resource files on diverse topics from Prehistoric Animals and The Vikings, to Food through the Ages.

A similar package to Key Plus called **Timelines** is available from Soft-Teach (0895 40329) covering such subjects as European History and Ancient Greeks.

Software to support history is quite obviously very much alive and well and, most importantly, developing. For any parent or teacher who wishes to use a computer to support or motivate learning or an interest in history this can only be good news.

For me the signs of a good program rather than an adequate one are the level of support from resources supplied with the program and the potential for useful work away from the computer. Simulations and adventures are fine but it's what we can see, touch and hear in reality that provides all of us with experiences to mould and develop our learning.

History age line



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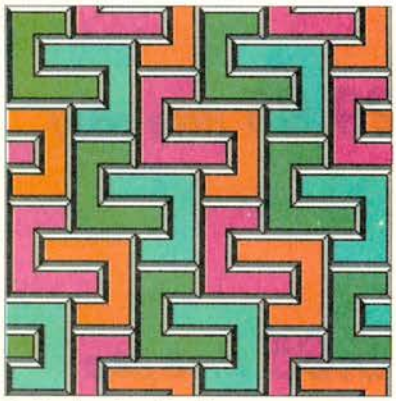
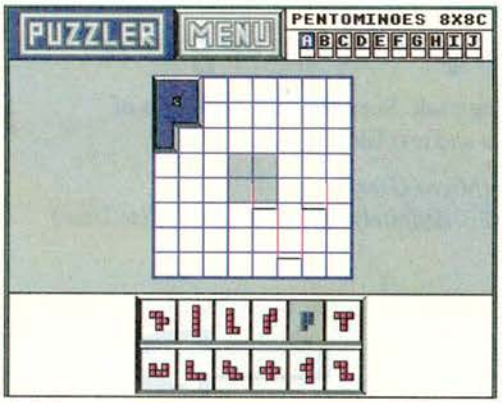
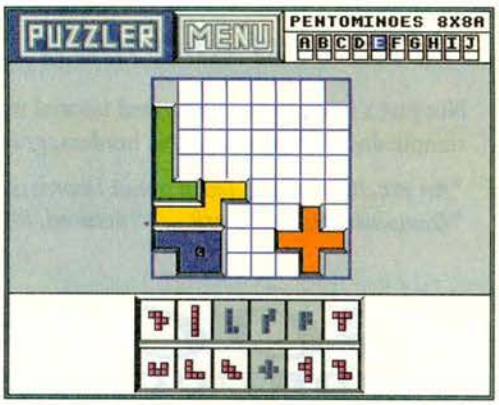


● *Getting the right fit*



● *Polyominoes is entertaining as well as educational*



● *You rotate and manoeuvre pieces into position*

A fitting solution

Rog Frost looks at a new rendition of an old favourite

POLYOMINOES represents the return of an old favourite for me. This was a program that I used to get totally frustrated with in the old days of the 8-bit BBC.

It involved two kinds of frustration: One was good – the problem of grappling with tiles and getting them into the right positions to complete a grid. The other was negative and concerned having to use a keyboard to move and flip the tiles and cope with the fairly slow graphic speed.

This new version keeps all the good points but uses the speed of the newer machines plus the mouse as a pointer to make the tasks easy to manage.

What is a polyomino? The first part of the program, called hexmaker, probably answers this. Imagine six small squares. Hexmaker asks you to place them next to each other in a grid to make as many different shapes as possible.

There are, in fact, 35 different shapes or hexominoes to make. When you've produced about 30 it is a real problem to try to find the last few different ones.

Hexmaker is the simplest part of the pack. The other programs, Puzzler and Tessellator, deal not just in hexominoes but in pentominoes and triominoes, dominoes and quadrominoes.

Puzzler asks you to place a set of polyominoes into a grid to fill it completely. The mouse is used to allow you to select, rotate, flip and place the various tiles. All you need is a brain to sort out just what should go where.

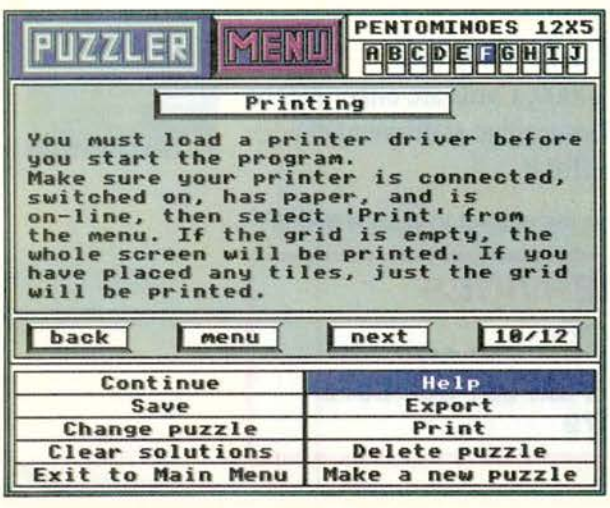
A large number of different puzzles can be set up. You pick the set of polyominoes you wish to use and the program then offers a range of possible grids to fit them into.

When a grid is chosen the computer ensures that a solution is possible but it doesn't show you. Solving such puzzles is the main point of the program. This makes it very suitable for home as well as school use.

Tessellator, the third part of the program allows polyominoes to be *hand* placed on a large grid. This allows repeating patterns to be built up using just one shape of tile, or a variety. Like the other programs, this makes good use of colour and the shapes can be saved as sprites for printing.

One of the problems with non-multitasking programs is that such saved sprites have to go on to the program disk. Also, the name of the sprite is given automatically which means that when one picture is saved, a previous save is over-written. On the plus side, though, the saved sprites are just of the crucial area. They are not memory consuming whole-screen sprites.

● *An easy-to-use program with a host of features*


PUZZLER
MENU
PENTOMINOES 12X5
A B C D E F G H I J
Printing
You must load a printer driver before you start the program.
Make sure your printer is connected, switched on, has paper, and is on-line, then select 'Print' from the menu. If the grid is empty, the whole screen will be printed. If you have placed any tiles, just the grid will be printed.
back
menu
next
10/12
Continue
Help
Save
Export
Change puzzle
Print
Clear solutions
Delete puzzle
Exit to Main Menu
Make a new puzzle

PRODUCT SPOTLIGHT

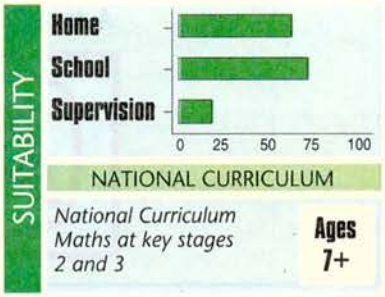
Product: Polyominoes
Price: £19.95
Supplier: Topologika, PO Box 39, Stilton, Peterborough PE7 3RL.
Tel: 0733 244682

Summing up

Polyominoes shows its BBC parentage. While the mouse is used, the program does not use standard routines and the various functions have to be learned. Having said that, the whole operation is very easy to master.

I love puzzles and I am happy to tussle with them for hours. I am not alone in this and the program has quickly become popular at my school. This is not just in maths lessons but also as a club activity.

The program is cheap with the site licence included and simple to use.



Lights, sound and action

A compilation of education games is good value for money. Marshal Anderson assesses HS Software's contribution

HHS Software have made quite a name for themselves over the past few years by sticking to simple but effective packages that provide reinforcement of specific skills at specific levels. The latest package is a compilation of three simple activities for children at the primary level.

In **Weatherman** you are presented with a weather map and its accompanying weatherman. Along the base of the screen are a variety of weather symbols which can also include a simple temperature range. The weatherman speaks, telling you for instance, that in the South there will be snow.

You click on the required symbol, some are animated, and drag it to the South of the map. If you have selected the temperature option you also have to click on the required temperature and drag that on to the required part of the country. And that's it. So, you're looking at points of the compass and how they relate to a map of the UK. You can use the country names of Scotland, England, Northern Ireland and Wales.

The actual weather types available are rain, snow, storms, sun, clouds, sleet and fog and you decide whether you want just one or any combination of these. This lets you cue into the work about weather in the National Curriculum science document and the addition of the temperature option adds a little maths.

The three variants of the game allow you to place the symbols as they are spoken, make up your own weather forecast or type in the names of the type of weather being presented. There is also the facility to save the weather map as a sprite at any time and therefore use it in other packages.

Kevin's Quiz is a maths game for up to three players. The screen is set up like a TV gameshow with a panel of three contestants and a quizmaster in a suitably tasteless jacket. To start with you get to select your gameshow panelist and then maths questions are asked in turn. If the player in question doesn't answer in the time, the question is thrown open to the other contestants.

Addition, subtraction and multiplication are all dealt with – the absence of division is odd and a little annoying. The size of the numbers dealt with in each type of sum is controllable so the game can be tailored, to some extent at least, to a wide range of abilities.

All the characters are animated and speak with broad Birmingham accents. At the end of each game the winner gets to hum along with Kevin and if I were Mr Strauss I'd sue.

In **Gnomework** you find yourself relaxing in the garden attended by Gerald the Gnome. Spread around the screen are a number of objects loosely grouped into flowers, fruit 'n' veg, and animals. The gardener will give an instruction like: *Find all the butterflies* and you click on the said creatures.

Gerald legs it across the screen with his wheelbarrow and collects the butterflies that are then placed in one of three columns.

At a more advanced level you might be asked to collect all the *things to eat* – you aren't allowed to eat the birds. At the end of each game you are asked how many of each type of object there are and the three columns can be used to create a simple bar chart to help with this.

PRODUCT SPOTLIGHT

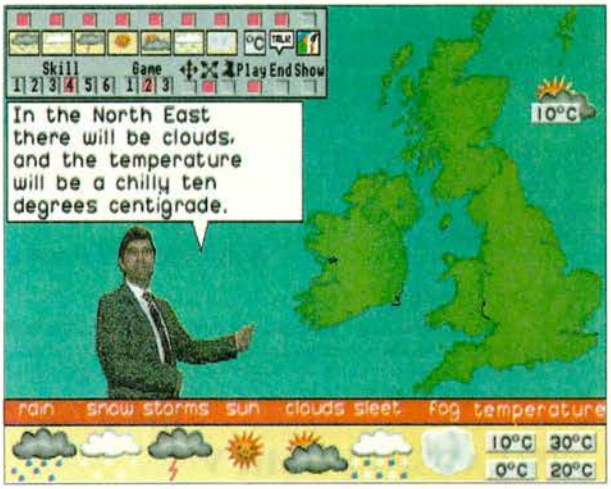
Product: TV Fun and Games
Price: £22.95
Supplier: HS Software, 56 Henrefoilan Avenue, Sketty, Swansea, West Glamorgan SA2 7NB.
Tel: 0792 204519

Summing up

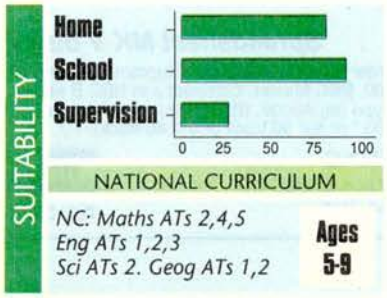
All the games give a wide variety of play levels which makes them useful for a broad ability range. The speech is very well done and the graphics pleasing. At the price they are certainly worth installing in a primary school and have a fairly respectable re-play value so are suitable for the home.

● *GnomeWork stresses matching skills*

● *Kevin's Quiz uses a gameshow host to test your maths*



● *Describe or create your own weather conditions*



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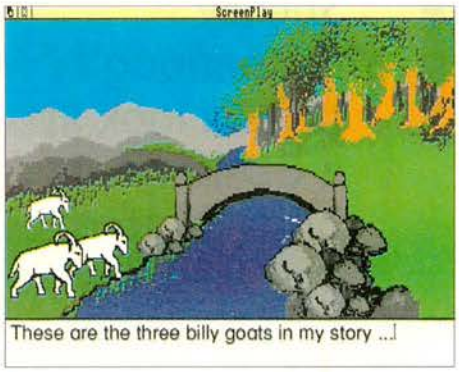
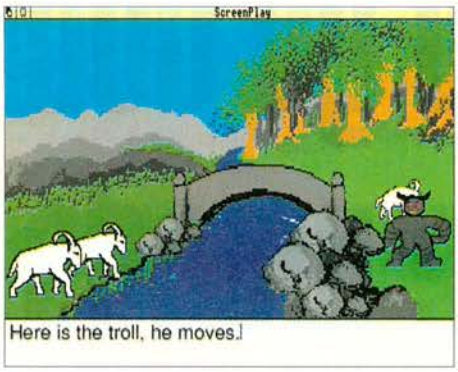
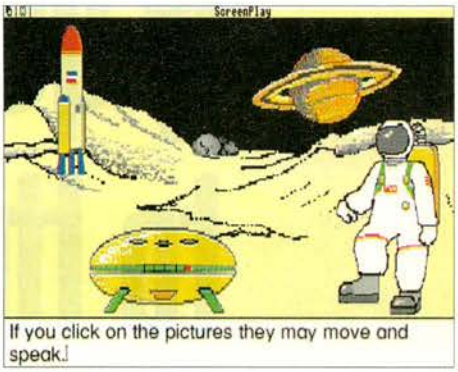


● *You can use old tales or ones of your own*



● *Add animation, sound and text as you want*



● *Everything you need can be put on a page*

Moving pictures and words

Pat Janes assesses a package with appeal across both ages and abilities

SCREENPLAY is a simple-to-use package which lets you animate a story you write on the computer. I really did enjoy myself with this program. The instructions are clearly written and the demonstrations on the disk are easy to follow. Don't fall into the trap I did and not load the fonts first – unless you already have Jotter in your system of course.

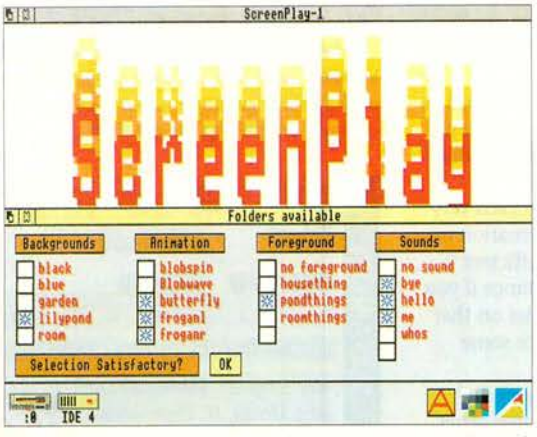
The program is designed for children with severe learning difficulties and they enjoyed the targeting exercises especially as they could take a hand in writing them themselves. One nice touch is that they were able to read words in a size and shape they recognised.

PRODUCT SPOTLIGHT

Product: ScreenPlay 2.1
Price: £35
Supplier: Widgit Software, 102 Radford Road, Leamington Spa, CV31 1LF.
Tel: 0926 885303

The instructions are very well written and I especially appreciated the double pages in the instruction book which gave the screen theme, the images and then curriculum ideas. The graphics on the Path Tool dialogue box are easy to remember too.

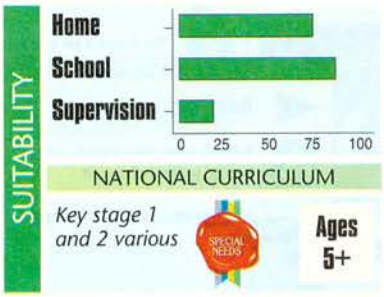
I used ScreenPlay with nursery and lower school ages as reinforcement exercises as well as with children with learning difficulties. Classes – and teachers on their own – are well able to design their own stories and exercises.



● *The folder selection is ideal for someone inexperienced*

Summing up

I also used this at home with two children aged two and four who spent quite a time testing each other's colour and object recognition. Two other children aged 10 and 12 enjoyed making up their own stories and I spent a considerable time resurrecting The Little Blue Tractor stories I wrote for my sons making them available to my grandchildren on screen and on paper.



● *Flexibility and experimentation are vital for both the creator and the user*

If you go down to the woods...

Shelley Birchenough takes a look at a CD-Rom of birds, butterflies and badgers

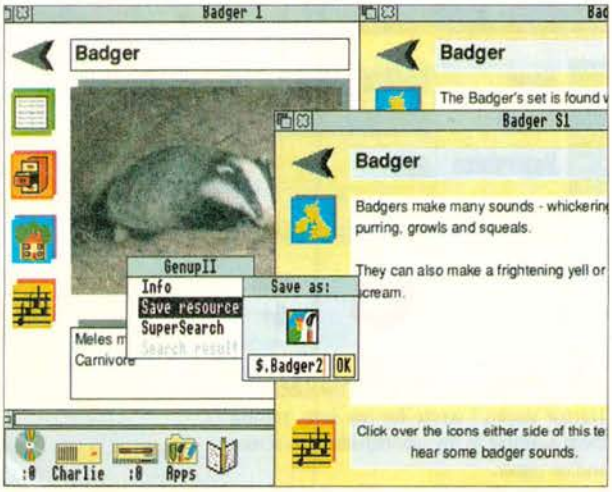
PRODUCT SPOTLIGHT

Product: Woodland – Wildlife on Rom 1
Price: £150 (Teacher's Pack £15)
Supplier: APA Multimedia, 8 Henley Business Park, Trident Close, Medway City Estate, Rochester, Kent ME2 4ER.
Tel: 0634 295222
Requirements: Risc OS 3.1, CD-Rom Drive

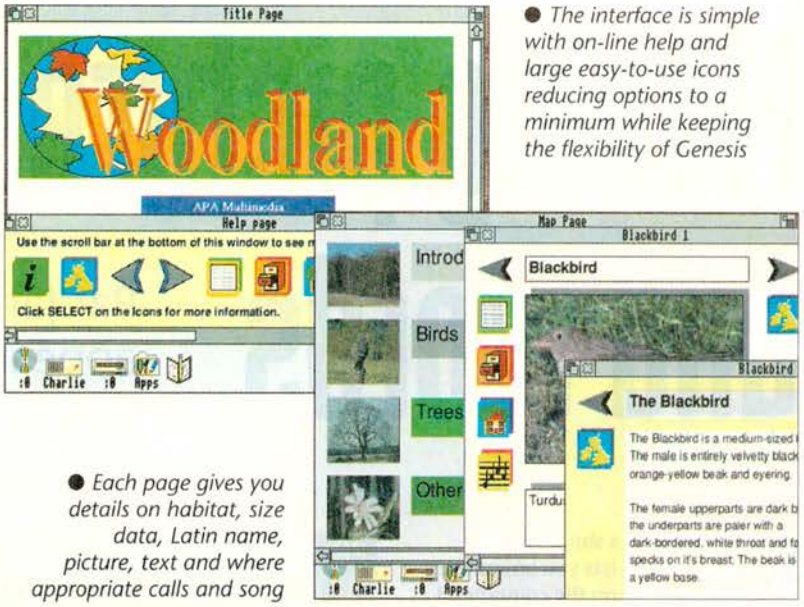
THE season of field-trips has begun so it was with interest that I loaded the latest in CD-Roms, Woodland. The children took to the interface straight away as they have used Genesis in the past and APA have added GenUp which compiles Genesis applications making them take up less space, run faster and dispense with the Browser.

Woodland contains a lot of information and if you have access to a network the large introduction can be read by more than one child. If not you can always save the text and print out the sections you need. Both I and the children found the BookMarker application which comes with Woodland very useful as you can save your place or places for later on a separate floppy disk.

The major emphasis is on birds – with 32 projects to follow up on later if you want some ideas. The pictures are good and clear, as well as recognisable bird songs/calls, a filing cabinet icon with data on size and so on, notes on the particular bird and the house icon which gives you access to details on habitat.



● *31 projects are included setting tasks and topics around woodland birdlife*



● *The interface is simple with on-line help and large easy-to-use icons reducing options to a minimum while keeping the flexibility of Genesis*

● *Each page gives you details on habitat, size data, Latin name, picture, text and where appropriate calls and song*

The interface is simple with on-line help and large easy-to-use icons reducing options to a minimum while keeping the flexibility of Genesis

Each page gives you details on habitat, size data, Latin name, picture, text and where appropriate calls and song

Just click on the map to get back to the main menu and if you are unsure of what everything is the information icon gives you good clear on-line help.

However, birds are not the only inhabitant on woods and there are sections on trees, minibeasts – such as butterflies, flowers, mammals and fungi. All these are well presented and you can easily flick from one section to another in the usual Risc OS way using the Select and Adjust mouse buttons.

The aim of the package is to stimulate work outside the classroom – which it did – and to be a source of information on what was seen and noted.

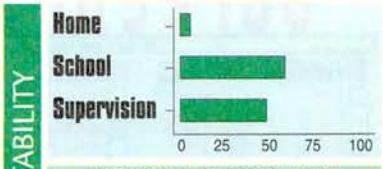
The SuperSearch facility worked very well for finding specific information on creatures and doubles as an efficient indexing system too. For instance if you saw a *jay* the number of entries on that bird would keep you going for some time.

If all you have is a colour you can only refine your search with two other and/or categories. This could be seen as a disadvantage, but in use it made the children think logically about what they knew about other aspects of the brown bird they had seen. Though they were a little confused that searching on red didn't reveal a robin.

Summing up

An encyclopaedia-type CD-Rom, but crammed with information rather than replay files, is definitely one for school use. The speed with which my testers got into the program and the things we all learnt speaks for itself.

APA are planning to release a second Wildlife package on Seashore Ecology and another package on dinosaurs. I for one will be looking out for them.



ART & DESIGN

ATELIER

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A 256 colour art program which allows stunning graphics to be created easily and professionally. In addition to the standard line or circle type functions advanced features allow anti-alias squashing, rotation of areas into any quadrangle, sprite and brush patterning and a sophisticated system allowing brushes to only affect specified colours. This allows the user full flexibility and the ability to paint 'behind' colours. Images can also be mapped onto any definable 3D surface. One of the most sophisticated art packages on the market.

PRIMEART

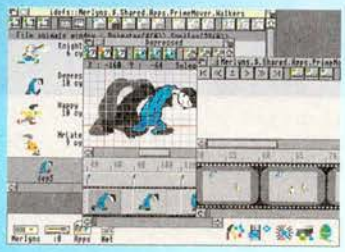
£79.95

PrimeArt is a 256 colour art package with on-line help designed for use with Primary and Special Needs Children. Menus can be tailored to suit a particular class or individual child. Sprites can be imported and saved in a viewing window and can be used to paint, produce stunning tiling effects, be placed anywhere on screen and even rotated and resized. This allows children to build up pictures from the sprite library, eg. a farmyard scene by placing sprites of animals onto a background picture. Poster size prints available.

PRIMEMOVER

£79.95

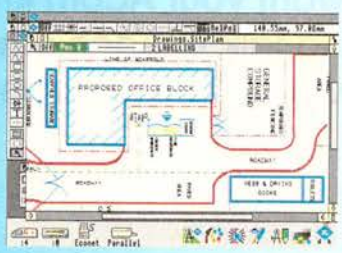
PrimeMover is a RISC OS compliant sprite animator which is entirely mouse operated. It features a simple to understand user interface, yet has many powerful features. For example, you can preset the path that you want a sprite to traverse and let PrimeMover do the rest. PrimeMover is not just a simple sequencer but a real time animator. Schools will find that this package has many uses across the curriculum from Art and Graphics through to science etc.



CADet

£149.00

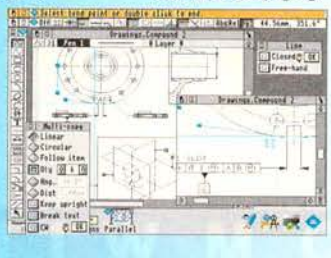
A comprehensive CAD package with many outstanding features which makes it ideal for use across the curriculum. CADet is a fast 2D draughting package which allows multiple drawings, user defined symbol library and architectural and ordnance survey type fills. CADet supports HPGL compatible plotters and has a multi-tasking plotter driver up to A3 in addition to an online quick print facility using the RISC OS printer drivers. Drawings can be imported and exported as draw files.



ProCAD

(Educ Price £395.00) **£495.00**

An extremely fast, professional 2D draughting package. ProCAD allows multiple drawings on screen with multiple views to differing scales if required and 32 layers of drawing. Features include auto dimensioning, intelligent point snap with geometric features including tangents to circles, multiple fonts, user defined symbol library and architectural and ordnance survey type fills. ProCAD has a multi-tasking plotter driver and supports HPGL plotters up to A0. Imports and exports in draw and DXF formats.



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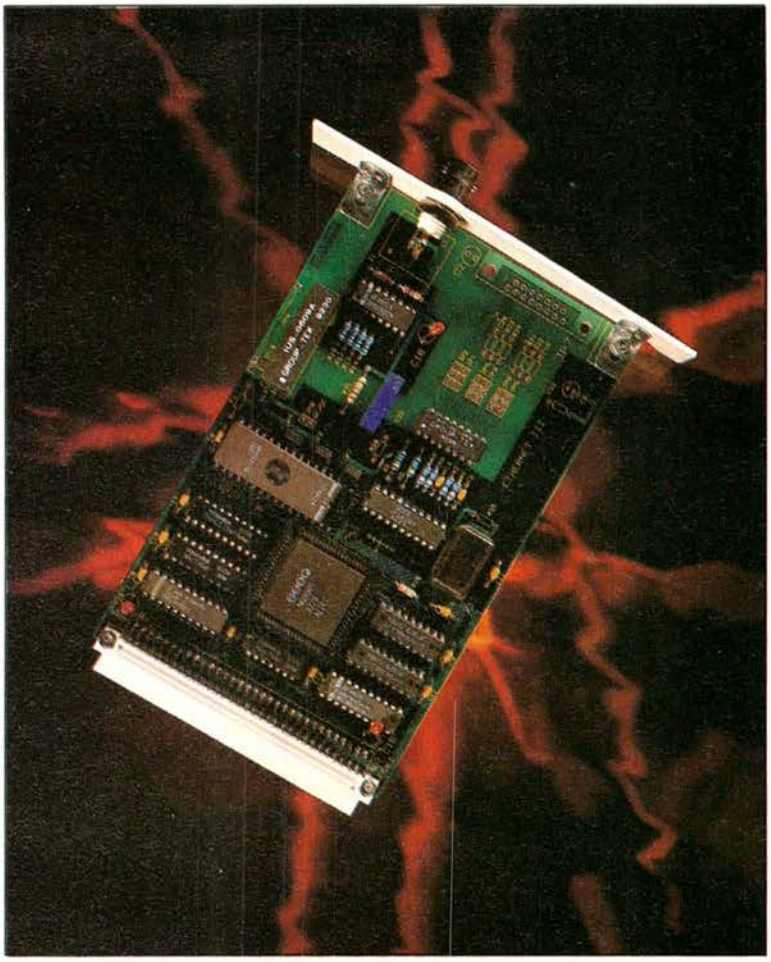

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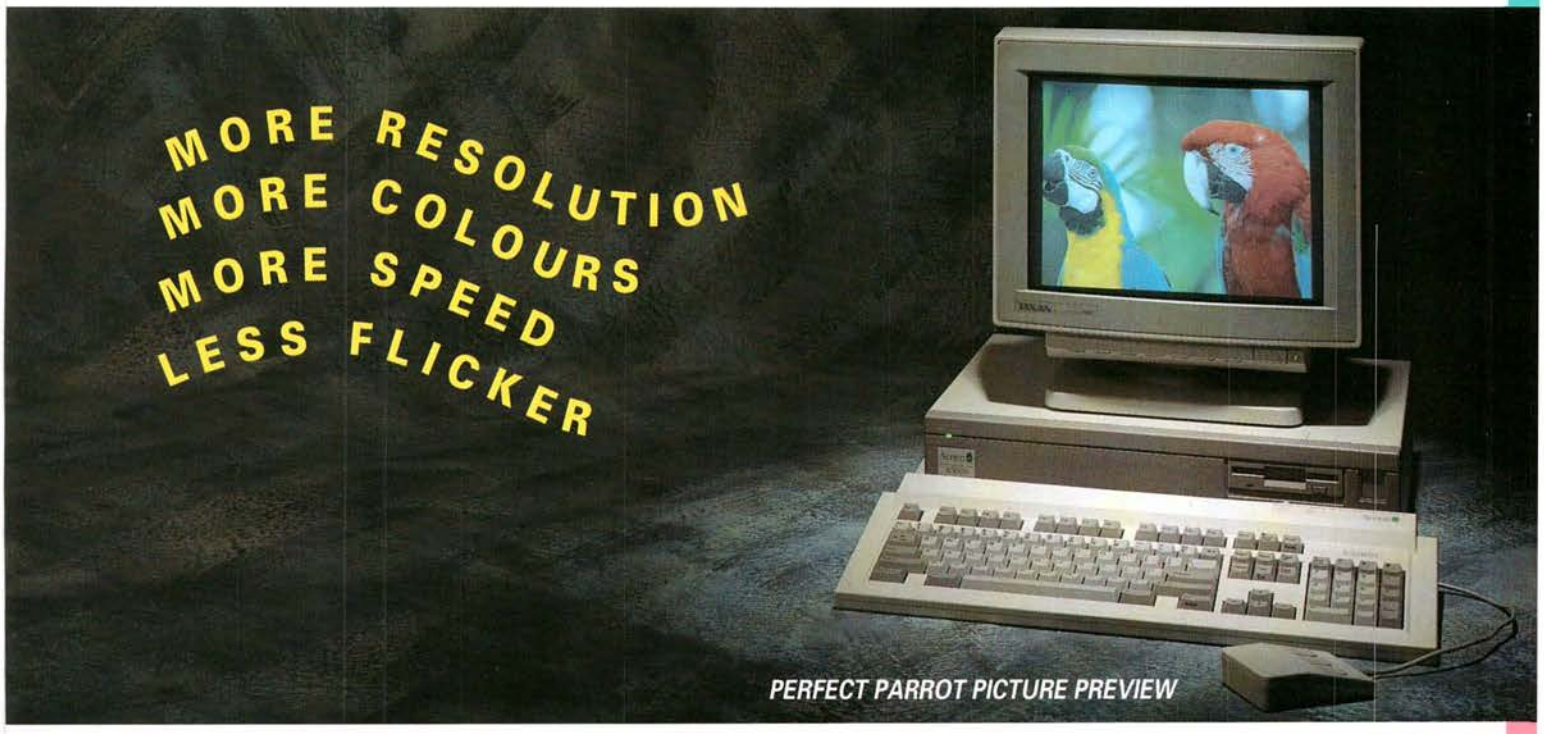
THE ColourCard

FOR THE ARCHIMEDES



A new graphics accelerator card for the Archimedes, the ColourCard brings a host of improvements to the video capabilities of any Archimedes A300*, 400*, 540 or 5000 series computer.

The simple to fit, single width expansion card is completely compatible with all RISC OS desktop software, but brings much higher screen resolutions at higher screen refresh rates (less flicker and easier on the eye).

In 16 and 256 colour screen modes all the colours are selectable from 16 million hues. This means scanned pictures can be seen with 256 true grey-levels on screen and that you are no longer restricted to the preset Acorn palette. Some applications, such as ArtWorks, can provide better screen colouring using the new palettes.

16 colours

256 colours

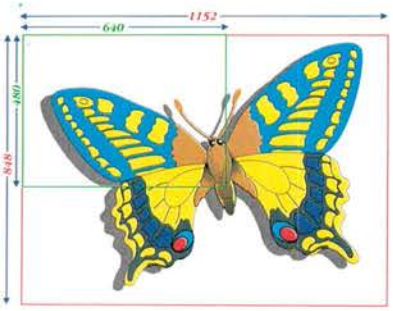
32,000 colours

SOME OF THE SUPPORTED SCREEN RESOLUTIONS	
1600 x 600	65Hz
1024 x 768	72Hz
1152 x 848	64Hz†
1280 x 512	80Hz
800 x 600	85Hz
1152 x 424	80Hz
800 x 300	80Hz
576 x 424	90Hz

In addition, the ColourCard offers 15 bit-per-pixel true colour screen modes having over 32,000 colours on screen at once. Although these screen modes are not yet desktop software compatible, it is expected that programs will become available that take advantage of the modes. The ColourCard is supplied with a 24-bit preview utility to show 24-bit Clear files in stunning full colour.

The ColourCard reduces the load on the main Archimedes memory and so allows the ARM processor to run much faster than would normally be possible in high resolution screen modes. Depending on machine and screen mode, graphic operations can be up to twice as fast.

The ColourCard revolutionises DTP and graphics work, and opens up the world of true-colour graphics to the Archimedes user for the first time.



ColourCard offers 3 times the pixel area of standard Acorn VGA mode 27.

The ColourCard has been developed and is backed by the largest and most successful Archimedes developer. It is available now, and for added peace of mind comes with a 14-day, no quibble money back guarantee.

KEY COLOURCARD FEATURES:

- **Version 1.1 now supports 32,000 colour card screen modes**
- **Video pass through for guaranteed compatibility with all software without having to unplug your monitor**
- **15 bpp (ie 32,000 colour) screen modes**
- **No quibble money back guarantee**
- **A3000 version now available**
- **New configurable screen update speed**

*(The ColourCard is compatible with all multi-scanning monitors. †Only higher scanning rate monitors can manage 1152 x 848 resolution. Lower scanning rate monitors may display some resolutions at lower refresh rates. *A300 and early A400 computers may need an additional Genlock connector to be fitted internally.)*

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TECHNODREAM

TECHNODREAM

At last, the action-packed sequel which everyone has been waiting for! Now, in addition to a 1 player option, you can choose to have 2 players simultaneously. Now, in addition to horizontal parallax scrolling, there is vertical scrolling to give a much enlarged playing area.

You have been directed by the Terran Defence Agency to pilot the new V7 Terrastormer against the alien forces. Although vastly out-numbered, and initially out-gunned, you can collect extra primary and incendiary weapons and shields as you progress through Outer Space, the Satellites of Kirius and, finally, for the fearless few, the Colonised Worlds.

There are 18 increasingly fiendish stages, with brilliant arcade-quality graphics and massive animated sprites, plus digitised sound effects and 6 atmospheric pieces of stereo music. Control by keyboard or joysticks (Acorn A3010 or RTFM).

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